

ELEMENTS
OF
EDUCATIONAL PSYCHOLOGY

BY

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NAND KISHORE & BROTHERS,
BENARES.

1941.

Printed by—RAMA KRISHNA DAS,
at the Benares Hindu University Press, Benares

TO
MY TEACHER
RAI BAHADUR PANDIT LAJJASHANKER JHA.

FOREWORD

Mr. Shukla has had experience of teaching Educational Psychology for a number of years at one of the foremost centres of teachers' training in India. He is already well known for his numerous contributions and he has also done a distinct service by writing a book on Child Psychology in simple and elegant Hindi. The present work is another service which he can claim to his credit.

Not many books on Educational Psychology have been written by Indian authors so far and we welcome the effort of Mr. Shukla to present in clear and simple language the essentials of this important branch of the science of teaching to Indian students. One of the special features of the book is that illustrations have been made suitable to conditions of Indian life. Teachers under training as well as those engaged in school work will find the book very useful and up to date. The author has condensed much information and put together many views in a single volume without sacrificing, however, unity of standpoint in presentation. The book will serve as a very good introduction to the subject of Educational Psychology.

Calcutta University
January 12, 1941.

H. P. MAITI

PREFACE

Educational Psychology is a new and a growing science. It has made tremendous progress during the present century. It is universally recognised these days that every person put in-charge of the young should have a knowledge of Educational Psychology. He cannot discharge the duties of his office properly without knowing the laws of the growth of the child mind. The progress of a nation depends on the system of education, prevalent in the country, and a good educational system requires the services of men who are interested in different aspects of the life of the child. Hence the greater the interest that a nation shows in the study of the behaviour of the child, the better would be its progress.

It is very unfortunate that so far only a few Indian scholars have tried to study intensively the subject of Educational Psychology or have made experiments in the field of Education. Books written by Indian authors are very few; we have mostly to depend on books written by European or American writers. The latter cannot have as much knowledge of the special needs of Indian students studying Educational Psychology as an Indian author can have. Of course, the principles of a science are universal, yet the presentation of the principles differs according to the mind of the writer and the apperceptive mass of the reader. The illustrations to elucidate the principles have to be taken from the environment of the learner.

This book is an attempt to present the principles of Educational Psychology in a manner that may appeal to an Indian reader. The illustrations have been drawn from the everyday experience of Indian parents and teachers. I have kept in view the peculiar traditions and culture of this country. Where educational problems have verged on philosophy, the point of view generally adopted in this book is spiritualistic or idealistic.

Psychology, these days, is aping materialism in its effort to get the dignified name of science. Human behaviour is sought to be explained in terms of stimulus-response theory. The spiritual significance of the life of the child is being lost sight of. Of course, such an attitude is being condemned by some of the profoundest psychological and educational thinkers of the West. Education is essentially a spiritual affair. It has much to do with ideals and standards of conduct, that is to say, with spiritual values. A science, that undermines the belief in the existence of the spirit, is sure to ruin the cause of education.

As the book is primarily intended for students of Training Colleges, chapters of important books on the subject have been referred to at the end of each chapter of the book for further study. Of course, I am very much indebted to the writers whose ideas I have tried to assimilate and present in this book. They are like the refreshing reservoirs out of which one may drink at will. I hope the book will meet well the demands of the students of the Training Colleges of this country.

I am very grateful to Mr. H. B. Malkam, Principal, Teachers' Training College (B. H. U.) for giving me encouragement in writing the book. I received very valuable suggestions from time to time from my esteemed friend and colleague Mr. V. G. Jhingran. Both he and Mr. P. N. Sathu, a student of the Experimental Education Class of this college, helped me much in writing the chapter on Mental Testing. I thank them both sincerely for the interest taken by them in the work. In the end I express my sincere gratitude to my teacher Rai Bahadur Pandit Lajja Shankar Jha who created in me a love for the subject, and to whom this work is dedicated in appreciation of his virtuous life.

Benares Hindu University
January 1, 1941.

L. R. SHUKLA

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CHAPTER I

INTRODUCTORY

DEFINITION OF PSYCHOLOGY

THE SUBJECT MATTER OF PSYCHOLOGY — Psychology is defined by William James as "the Science of Mental Life, both of its phenomena and of their conditions." It studies such phenomena as feelings, desires and different modes of cognition. The student of psychology tries to know mental facts, classifies them in certain categories, and makes an attempt to determine their causes. Psychology in the past was a speculative science. The psychologist sat in his room and reflected on his mental states. But modern psychology is approximating in its methods and procedure to natural sciences like biology and physics.

Psychology as a separate branch of study is more than 2000 years old. It was the genius of Aristotle that gave birth to this science. Yet in its modern form it is one of the latest of all mental disciplines. It has been changing its meaning from time to time. Rudolf Goeckel, whose book on the subject was published in 1590, named it as *Psychologia*. This word is built up from *Psyche* meaning "soul" and *Logos* meaning "talk about" or "science of." Thus psychology meant "the science of soul." By soul was meant a being dwelling in the body which could at times even leave the body and go on a sojourn. A more advanced view regarded soul as "a vital principle inhabiting and animating each human body and somehow the ground of each individual's experience."* But

*McDougall. p. 10 *An Out-line of Psychology.*

psychology did not make much progress so long as the thinkers did not give up their theological bias. Soul in the theological or metaphysical sense is an entity inaccessible to scientific investigation

Psychology in the eighteenth century was conceived of as the science of mind. But according to one school the mind itself was nothing but an assemblage of ideas. Thus the "Associationist School" of Hume, Mill and Bain, constructed a psychology without a soul. Hume said, all we know directly is the stream of ideas and what we call the mind or soul is a mere empty stage which we unnecessarily assume to exist as the scene upon which the ideas play their part. "For my part," says Hume, "when I enter most intimately into what I call myself, I always stumble on some particular perception or other, of heat or cold, light or shade, love or hatred, pain or pleasure. I never can catch myself at any time without a perception, and *never can observe anything but the perception*. When my perceptions are removed for any time, as by sound sleep, so long am I insensible of *myself*, and may truly be said not to exist. And were all my perceptions removed by death, and could I neither think, nor feel nor see, nor love, nor hate after the dissolution of the body, I should be entirely annihilated"*

He further says that mankind are "nothing but a bundle or collection of different perceptions, which succeed each other with an inconceivable rapidity, and they are in a perpetual flux and movement." The Buddhists of India, who were psychologists of an advanced type, also regarded mind as a perpetually changing stream of ideas.

Psychology was regarded later as "the science of consciousness" According to James our mental life is a

**Treatise on Human Nature*, Chap. on Personal Identity

stream. We have to study this "stream of thought" as we directly know it. But to define psychology as the science of consciousness is in a way misleading. In the first place, the definition is not comprehensive enough, for psychology these days studies not only our conscious mental life but the unconscious also. Besides, it studies the relation of conscious life to bodily behaviour. In the second place, "consciousness," as McDougall points out, is a word that has "the form of a substantative which cannot be used as a verb" and 'allows us to forget that it stands for the fact of being conscious of something, and that it implies some one who is conscious of that thing.' .

(Thus we see that the definition of psychology as the science of mind or the science of consciousness is too narrow and even misleading.) Most of the writers on the subject, however, retain the definition of psychology as the science of mind inspite of the inadequacy of the definition. Thus McDougall defines psychology as "the science of human mind, positive and empirical." The word "positive" is added to distinguish it from normative sciences like ethics and logic, and "empirical" to mark the fact that psychology relies on the method of investigation common to all natural sciences.

The latest definition of psychology is that it is "the science of human behaviour." Thus McDougall defines psychology in his *Physiological Psychology* as "the positive science of conduct or behaviour." It is the science which aims "to give us better understanding and control of the behaviour of the organism as a whole." This definition lays stress on objectively observable facts, the facts of outward behaviour or bodily action in which mental activity expresses itself. It is free from many of the logical and other difficulties involved in other definitions.

The Behaviourist School of psychology understands the term "behaviour" in a sense different from the one held by McDougall. McDougall would not discard the hypothesis of the mind as something different from "the brain" or the body.* According to the Behaviourists psychology has nothing to do with consciousness or mind. It is like every other natural science objective and experimental. Every law of psychology is verifiable even as the laws of other sciences are verifiable through observation and experiment. Its subject matter is the behaviour or activities of human beings. Behaviourism discards consciousness because the factual data required for a natural science cannot be provided by it. As the facts are not available for objective study, they may well provide speculations for a philosopher but they cannot advance the progress of a science.

Psychology thus gradually lost one by one the various entities it postulated.† The psychologist is no longer an introvert, but rather an extrovert. From being the study of an intangible entity called soul, it has become a study of the most tangible facts of bodily behaviour. According to some writers the change has been responsible for the great advance made in the subject. The various ramifications of psychology are due to it. At least educational psychology and child psychology are greatly indebted to Behaviourism. But for the objective attitude that Behaviourism brought to bear on psychological studies the vast amount of educationally valuable data

*"The *mind*, then, of the individual organism is that which expresses itself in his experience, and in his behaviour, and we have to build up our description of the human mind by gathering all possible facts of human experience and behaviour, and by inferring from these the nature and structure of the mind." *An Outline of Psychology* p. 35.

†The changing attitude towards the subject is very cogently put by Woodworth thus. "First psychology lost its soul, then it lost its mind, then it lost consciousness, it still has behaviour, of a kind." *Psychology* p. 2.

could not have been collected. Obviously the child mind cannot be introspectively studied, and whatever light reflection on one's experience may throw on the facts of child behaviour, certainly it is the objective study of the behaviour as such that is truly the basis of child psychology or educational psychology.

METHODS OF PSYCHOLOGY

Examine one's own thoughts

INTROSPECTION :—The peculiar method which psychology adopts to collect its data is commonly known as introspection. It consists in trying to understand the nature of mental phenomena by looking within one's own mind and analysing them as they actually exist in any state of consciousness. Thus for instance if I want to know the nature of anger I must look within myself when anger comes try to know how it was aroused, what is the peculiarity of the experience, and what are the manifestations of the phenomena. The objections urged against this method are first, it is subjective; secondly the actual experience disappears as soon as one tries to catch it to analyse it, thirdly, it can be practised only by a few highly developed or peculiarly trained minds, and they usually project the state of affairs as they exist in their own minds into the minds of others.

Sandiford has urged the following objections against introspection —

- 1 The mind in watching its own working must necessarily have its attention divided between two objects—on the one hand the mental operation itself which is to be observed, and on the other the object to which this mental operation is directed. This difficulty was originally pointed out by Stout.
2. Introspection is always retrospection; it describes memories of events that either are past or passing away.

- 3 When an effort to observe the mental state is made, the very act of observing tends to change it. He quotes James "The attempt at introspective analysis is like seizing a spinning top to catch its motion"
4. Mental states change so rapidly that only the slower changes can be observed, the quicker ones elude introspection.
- 5 Little can be known about the hidden urges to action through introspection. Psycho-analysis has revealed to us the fact that a very large part of our mind is not open to introspection. The causes of "rationalizations," "automata," "dreams" etc cannot be known through introspection
6. A mental state is a unique event; introspection of a state that can never be repeated can never yield results of indubitable scientific value. This is to say the method is subjective and as such cannot be regarded as a scientific method.
7. Through introspection the minds of the insane and defectives cannot be studied, so too the minds of children or the behaviour of animals cannot be studied through it.

These objections are really very difficult to meet. As a matter of fact psychology remained at a very elementary stage, so long as introspection remained the sole method of approach to the subject. It is only when observation and experiment began to supplement the work of introspection, that the science grew to such an enormous extent.

But, however, difficult or inadequate the introspective method may be no psychologist can dispense with it altogether. The only way that we can understand the thoughts and feelings or motives of action of other men is by knowing how they rise in our own minds.

There is only one individual whom I know directly and that is myself, others I know only indirectly. I interpret their behaviour in the light of my own experience known through introspection. It is true that a training is required to be able to introspect, but so does every science require training. As for the difficulty of availing of the data, it is actually overcome by minds that have a proper training. Retrospection substantially helps introspection in collecting data. These data are supplemented by what we observe in the behaviour of other men and what they express. Lastly, it is wrong to say that the method is subjective. Though the psychologist directly studies his own inner experience, he always compares it with the experience of others and is not satisfied till he has attained to an objective point of view. "It is not the isolated observation which is of importance in introspective psychology but rather the accumulations of a vast number of observations, each helping others, introspection to be effective for the advancement of science, must like other modes of observation, be carried on by a number of experts in co-operation."* The introspective method though it is regarded as the peculiar method of analytic psychology, cannot be dispensed with in any psychological investigations. "Introspection," says William James, "is difficult and fallible; and that the difficulty is simply that of all observations of whatever kind." † Here James puts the difficulties of introspection in a line with the difficulties of collecting data through any other methods of scientific investigation. Hence a body of systematised knowledge built up through this peculiar method of study adopted by psychology can claim to be a science.

OBSERVATION -- Observation of the behaviour of others is also recognised as an important method of Psychological

*Stout *Manual of Psychology*, p 5

†*Principles of Psychology* Vol. I p 192

Study. Psychology, these days is becoming a natural science instead of being a speculative one, and it makes use of all those methods of investigations which are used by natural sciences to collect their data. By carefully observing the behaviour of human being, we can know what is going on in their minds. This is particularly the case when some emotion is aroused in the mind of any person. When anger or fear is aroused the individual invariably shows signs of his feelings in his external behaviour. However we may try to repress the external manifestations of anger, some how our feelings are betrayed by our behaviour. Then the problem of conditioning of a reflex, that of habit formation or modification of an instinct, the problem of interest and attention, of memory, delinquent behaviour of children and fatigue can all be studied through observation. It is regarded as an objective method as against introspection which, as pointed before, is often stigmatised by some as subjective.

EXPERIMENT:— The experimental method, the basis of experimental psychology, has been used enormously in recent years. An experiment is observation under known or determinate and prearranged conditions. Rate of learning, remembering and forgetting, transfer of training, span of attention, onset of fatigue, and several other mental phenomena are in this way measured by experiments. Sometimes large statistics are prepared relating to the experiments, and then the method is known as the *statistical method*. The experimental method has played a very important part in developing the science of education.

COMPARATIVE METHOD. Psychologists study not only human behaviour but they study animal behaviour also, for very often as pointed out before, a study of the latter throws much light on the former. This way of studying human behaviour is known as the *comparative method*. It

has given rise to comparative psychology. Thus for instance a psychologist studies the behaviour of wasps, birds and animals to know whether instincts can be modified by experience or whether instinctive actions involve the use of intelligence.

BRANCHES OF PSYCHOLOGY.

Psychology now has several branches. Thus we have Individual Psychology or General Psychology, Social Psychology, Abnormal Psychology and Animal Psychology. These names are given according to the data which the science of psychology studies. Names are also given according to the peculiar method of investigation followed. Thus we get Analytic Psychology, Genetic Psychology, Experimental Psychology, Comparative Psychology and Educational Psychology. It will be worth our while to explain the terms used to name the several branches of the subject more fully.

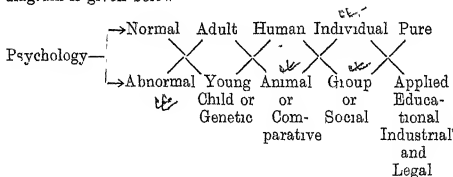
Individual or General Psychology studies the various mental processes and behaviour of an individual more or less in isolation from the group in which he lives. Social Psychology deals with the behaviour of individuals in relation to society. Thus, for instance, there is an inherited tendency in every animal to imitate others. This innate tendency is studied in general psychology as well as in social psychology, but whereas the one studies the origin, the development and modification of this tendency from the point of view of the individual, the other studies it from the point of view of the group. The latter is more concerned with the characteristic manifestations of this tendency and the law of its working in society. It tries to reveal its social significance.

Abnormal Psychology studies the individual as he thinks, feels and behaves in an abnormal state of mind;

it studies, in other words, his abnormal thoughts, feelings and modes of behaviour. Such phenomena as dissociation of personality, insanity, hysteria, fixations, obsessions, and dreams form the subject matter of the study of Abnormal Psychology. *Psycho-analysis* which also studies abnormal phenomena of the mental life of an individual is an offshoot of this science. The former has developed into a science only in the present century and its study is proving to be of much value to the educators.

Animal Psychology or Comparative Psychology studies the behaviour of animals in different situations. This study has proved of immense value as throwing light on the origin and development of certain tendencies which we find in a very modified and complicated form in a man. The true nature of our instincts is known in this way.

Sandiford has devised a very good diagram to enable one to remember the various divisions of the subject. The diagram is given below —



"Each term in the upper line is contrasted with the one immediately below it—Normal with Abnormal; Human with Animal, and Pure with Applied. The lines and the cross lines indicate the various combinations which are to be found." The chief divisions of the subject are—Normal Psychology, which studies the behaviour of normal adults.

and normal children, Abnormal psychology which studies the behaviour of abnormal adults and abnormal children. Similarly there are other branches—Adult Psychology, Child Psychology, Human Psychology, Animal Psychology, Individual Psychology, Social Psychology, Pure Psychology and Applied Psychology. Of course, these divisions are not absolutely exclusive of each other.

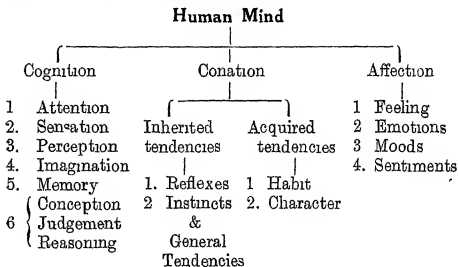
SCOPE OF PSYCHOLOGY

Psychology according to Stout deals with immediate experiences such as attending, feeling, desiring, having sensations or images. These immediate experiences may be subjective or they may be objective—that is, they may be such as are not capable of being pictured before consciousness, or they may be capable of being pictured. But here the use of the term subjective and objective marks off only a relative difference. There is, on analysis, found no fundamental difference between the two kinds of immediate experiences. One thing, however, marks distinctly the subject matter of psychology from the subject matter of other sciences. Psychology studies human experience primarily; it studies the conditions of the arousal of that experience only secondarily. Thus psychology is interested in what is perceived only in so far as it is related to the process of perception.

Human experience has three fundamental characteristics. All experience is a knowing, a willing and a feeling. Some psychologists emphasise one characteristic and point out that others are subsidiary to it, others emphasise the importance of other characteristics. The Presentationists and Associationists (Herbart and Hume) emphasise the knowing side and think that mind is an assemblance of ideas; action and feelings are determined by knowledge. There are others—those belonging to the *Hormic School* such as McDougall who assert that all

knowing occurs in subservience to action. At the root of all life there is a will to self-expression. It is due to this fundamental urge that the conative or affective mental structure is developed. *The will to live*, which is responsible for all phenomena of life is eternally active. It evolves, according to Shopenhauer, *the understanding* to gratify its inner cravings.

Leaving the controversies aside we may accept the conclusion arrived at by all the schools that human consciousness has all the three elements—knowing, feeling and willing or cognition, affection and conation. They characterise all awareness, or every psychosis. Hence we have to study the mind in its three above mentioned aspects. The whole field of psychological study may be generally represented by the table given below.—



A few decades ago psychology studied only the conscious processes of the human mind, but now the field of psychological study has immensely widened due to the researches of the Psycho-analysts regarding the unconscious processes of human mind. Today psychology studies both the conscious and unconscious realms of our

mind. The latter is ever expanding itself ; new light is thrown by workers in this field practically every day about the true nature of our minds and its processes.

PSYCHOLOGY AND EDUCATION

In developing the theory of Education and in improving the practice of teaching, psychology is playing these days an increasingly important part. Every day experimental psychology is bringing out results which are immensely influencing our educational practice. Teachers have begun taking interest in the study of psychology and educational authorities every where have deemed it necessary for all the teachers to undergo a formal training in the training colleges, and learn psychologically sound methods of instruction before beginning their professional career.

In the past, however, the attitude of teachers towards psychology was that of indifference or even of positive repulsion. It was thought that a teacher cannot become more efficient in his art by his knowledge of psychology. Teaching requires practical skill and not introspective study of the mental processes. The teacher who is given to introspection is likely more to be a failure than a success in his profession, for his introvert attitude would be a hindrance to his progress in teaching and controlling the boys. Some philosophers also hold the view that far from psychology being helpful to education, the teacher's indulgence in psychology is positively detrimental to its cause. The attitude of the psychologist is analytic, whereas that of the educationist or the teacher is synthetic. The teacher is essentially an artist, a creator and not an analyser or dissector of his material. The teacher's attitude has to be that of an idealist, whereas the psychological attitude is a

realistic one. The teacher sees the child in the terms of what he ought to be, whereas the psychologist sees the child as he is. The teacher, therefore, will cease to be a source of inspiration if he becomes a psychologist.

The above arguments have a certain amount of validity. But they simply prove that the teacher has not to turn himself into a mere psychologist, and reduce his class-room to a psychological laboratory. He must be a man of high ideals who believes in the nobility of his profession. He has to help the child to manifest the divinity in him. But his knowledge of psychology is not a hindrance to this. He has to be skilled in his art, but his skill will bring forth even better results if he does not merely follow the rule of the thumb, but consciously makes use of the principles he has learnt through a deeper insight into human nature. It is true to say that a good teacher may not have much knowledge of psychology and a good student of psychology may be an indifferent teacher, for the ability to teach depends not merely on the information which psychology gives about the working of human mind, it equally depends upon individual resourcefulness. A good student of psychology may not have that amount of resourcefulness which a skilful teacher has. Yet the knowledge of psychology will certainly prevent the young teacher from committing many blunders and learning the art at the cost of the students.* Again the rule of the thumb

*"The science of logic," says William James, "never made a man reason rightly, and the science of ethics (if there be such a thing) never made a man behave rightly. The most such sciences can do is to help us to catch ourselves up and check ourselves, if we start to reason or to behave wrongly, and criticise ourselves more articulately after we have made mistakes. A science once lays down lines within which the rules of the art must not transgress, but what particular thing he shall positively do within those lines is left exclusively to his own genius. One genius will do his work well and succeed in one way, while another will do as well quite differently, yet neither will transgress the lines." *Talks to Teachers*. p. 8.

sometimes does not work, and then sound psychological principles must be there to guide a teacher

Those people, who urge that since the psychological attitude is analytic it would destroy the synthetic attitude of the teacher, ignore the facts of history. The two attitudes are not altogether incompatible with each other. Pestalozzi and Herbart were great idealists and yet it is they who aimed at psychologising education. Science does not necessarily hinder art—rather with scientific insight gained, the artist raises himself to a higher level and makes his work of eternal value. In the case of education it has proved true beyond all doubts. *The Child Study Movement* has helped more the cause of education than any theorising ever did.

The child is the material with which the teacher has to work and if he does not know the nature of his material well, he is not likely to succeed much in his undertaking. The teacher should not be merely a master of his subject, believing that somehow the knowledge he possesses will trickle down to his pupil, but he should also know thoroughly child nature and the method of communicating his knowledge according to his needs. As John Adam said, "The verb of teaching governs two accusatives one the person and another the thing—the teacher taught John Latin. The teacher should know John as well as Latin."

The knowledge of psychology, it is true, does not help us in determining the aim of education, for this we have to look to moral philosophy for guidance. The formulation of the aim of education depends upon the aim of life as one conceives it. But in telling whether a particular aim is attainable or is to remain ever in the clouds, it is psychology that will help

us Even rules of moral conduct have to be framed keeping a due regard to the excellences and failings of human nature as we know them through psychology. Psychology also helps in knowing how far the aim has been actually realised by us Whatever may be conceived as the aim of education, for the achievement of the aim modification of the behaviour of the individual will be always necessary Now in successfully modifying the behaviour of the individual, with the least expenditure of energy and time, psychology surely proves very helpful It is also helpful in understanding the hidden motives of any kind of behaviour, and we can modify these only with a sound knowledge of psychology

The teacher with a knowledge of psychology will handle the child better If he knows the nature of the child well, that is, his innate endowments, the laws of his mental development, the home and the school influence on him, how character is formed, he will do more good to him than is otherwise possible The importance of psychology to education has increased due to the recognition of individual differences, emphasis on motivation, encouragement of spontaneity in the child, and a consideration of the child's total personality Until quite recently education was meant mainly for the average child. The individual differences received scant recognition If an individual did not fit in into a uniform social order he was segregated. The subnormal child and the genius received little consideration. All attention was given to normal child

Now this attitude has changed. The educator now pays heed to the individual differences and aims to perfect each individual after his kind The child's spontaneity is encouraged. He is not forced to learn lessons but rather his interest is awakened in the subject, and

then he is merely guided in the process of self-education. The student's tastes and aptitudes are now carefully studied and work suitable to each student is given to him. All this implies a careful study of the child's mind.

In the actual practice of teaching also, the knowledge of psychology proves very useful to a teacher. He has to awaken the child's interest in the subject taught, so that it may be easily learnt by him. For this he must know the natural inclinations of the child and work in a manner as not to conflict with Nature.

A teacher is entrusted with the task of educating the child put under his care. He has to direct the physical and mental growth of his ward in such a way as to make him a useful and effective personality in the world. Every community has a certain ethical ideal or standard of efficiency and thus the educator has to enable the child to realise it. One of the means of realising this ideal is to instruct the child in the way he has to live, to impart information to him and thus to communicate to him the social traditions and beliefs of the age. Usually it is this process of instruction and imparting information that goes by the name of education, and it is with this that the teachers are generally concerned.

This, however, is a very restricted or even perverted view of education. In the more comprehensive sense, it includes instruction, but it includes many things more. Education is the cultivation of all the moral, intellectual and physical powers. In its widest sense it includes all the influences which act upon the individual from infancy to the grave. "Education," says Raymont, "is the process of development in which consists the passage of a human being from infancy to maturity, the process whereby he gradually adopts himself in various ways to his physical

social and spiritual environment”* If we take such a comprehensive view of education, we can at once see that no one is qualified to undertake that sacred task who is ignorant of the laws that underlie the growth of human personality† It is with these laws that Psychology acquaints a teacher The child is a book, said Rousseau, which the teacher has to learn from page to page. Education is concerned not only with imparting knowledge which the teacher has under his command, but it is also concerned with the formation of the right habits of thought and action, cultivation of proper tastes and development of character in a child. The teacher cannot realise these objects of education without a knowledge of psychology. Children who are mishandled in early life grow up as unhealthy personalities. The early impressions of our life are the most enduring of all and if the child, due to the teacher’s ignorance, receives wrong impressions about any thing, he carries them with himself all his life and they do him great mischief Similar is the case about his feelings and the direction of his active nature Many complexes are formed in the early life of children or undesirable sentiments developed which cannot be easily removed.

**Principles of Education*, p 4

†“Education,” says Morgan, “is no longer merely drilling the child so that he can read certain languages, perform certain skilled acts, solve so many arithmetic problems know so many historical dates and names, and recite so many lines of poetry. It is all these but it is a vast deal more. It is the development of every phase of the child’s life so that he becomes a unified and integrated-personality.

“A good educational task is not accomplished when one is trained to be good scientist, if he cannot get along with any one because of his irascible disposition One is not the best type of person if, when he meets an unusual difficulty, he throws a temper tantrum, banks some one else gets sick, sits and day-dreams.

In other words, we have added to our task in the education of the child the goal of mental hygiene We must develop the child to meet his difficulties squarely rather than by the adoption of some silly ‘defence mechanism designed to deceive himself and others as to his true worth’ *Child Psychology* Chap I

Headfield in his book *Psychology and Morals*, tells us of a peculiar case of a distinguished lawyer of Germany, who used to experience, on occasions, a very severe pain in one of his feet. He could not know the cause, and eminent doctors also failed to diagnose the disease. He finally approached a psycho-analyst, who through analysis discovered a hidden complex in the mind of the lawyer. In his early childhood, while coming to the school, he saw on the road a man with a badly crushed foot. He was moved by a feeling of pity and horror, and his mind was so engrossed with the scene that not only was he late to the class that day, but he could not answer properly the questions put by the teacher. The teacher rebuked and chastised him for his unusual conduct. The boy felt much humiliation, and as he was a brilliant boy his feeling of shame and humiliation was intense. This feeling could find no expression in his early life and so it remained repressed for a long time till it worked itself out in the form of the foot-ache. The lawyer experienced pain only when he lost a law suit. The feeling of the sense of horror for the crushed foot had become in his early life associated with his feeling of self-abasement. The pain of the crushed foot, however, had been now transferred from the seen person to the seer himself. So the pain occurred whenever there was a feeling of self-abasement.

This is an extraordinary case. It, however, brings into clear relief what occurs to the mind of the child whenever there is a great convulsion of his feelings. Teachers have to learn lessons from all such cases. Pain increases in intensity, as Schopenhauer points out, as man grows in intelligence and genius suffers from pain most. The more intelligent a child is, the more delicate is his nervous system. It cannot withstand rude shocks. Hence the teacher must be very careful while dealing with such sort of children. An angry word from the teacher sometimes does more harm to a child than all the good that

may have been done by him during several years of his teaching. The career of many promising children is spoilt through a careless handling of them by their guardians and teachers. We may be meaning good to them all the while and yet due to the ignorance of the working of the childmind we may do them irreparable harm.

Hence a great care is to be taken in handling the child, all this requires a good knowledge of psychology

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CHAPTER II

HEREDITY AND ENVIRONMENT

The growth of the child is a phenomena which is conditioned by the two very important factors—Heredity and Environment or Nature and Nurture. It is of prime importance to the educator to determine what exactly is the part played by each factor in the development of the child. It will decide the question as to what type of education is to be given to each child and how far he is to be educated.

MEANING OF HEREDITY — The facts of heredity are commonly stated in the proposition "like tends to beget like". The child receives a great many of his physical and mental traits from his parents. In appearance in bodily constitution in stature the son usually resembles his father or the mother. He also seems to inherit their likes and dislikes, their intelligence habits of thought and action, as well as the character. It is a popular belief that children of good and intelligent persons are good and intelligent, while those of the wicked and stupid are wicked and stupid, that is just as we inherit our bodies from our parents so too do we inherit their intelligence and character. How far is such a belief justifiable?

FACTS OF HEREDITY — The facts of heredity seem at the first glance very simple. When we find children born in well-educated or aristocratic families more intelligent and well-behaved than those coming from uneducated or lower strata of society we at once assert that this difference is due to heredity. When, however, the facts are critically analysed and judged, we find

that much that we unthinkingly attribute to heredity is really due to environment. The child possesses a number of traits of the father, not necessarily because he inherits them from the father, but because he is brought up with him. Similar is the case with family traits. Had the child passed his early life in a different atmosphere he would not, perhaps, have looked as bright. Similarly the educational experiments conducted at several places show that children of very unpromising stock brought up in suitable environment grow as good and sound personalities as those of high and noble descent. One must dis-entangle facts of strict *biological heredity* from those of 'social heredity,' which is nothing but another name for environment, before any judgment is pronounced as to the importance of heredity in the development of the child.

Francis Galton brought eight histories of twins who behaved throughout their lives like clocks turned over by the same factory and wound up at the same time.

Those who followed his line of research further have unearthed a number of family histories which show how tenaciously and unflinchingly the law of heredity works. One such history is that of the family of Jukes. It has been unearthed by Dugdale and Dr Estabrook. Jukes was a shiftless hunter and fisher whose sons married women of very degenerate family and produced a race of invalids, imbeciles and criminals. "Out of about 1,000 persons in five generations" says T. P. Nunn, "300 died in infancy, 310 spent 2300 years in almshouses; 440 were wrecked by disease, 130 were convicted criminals (including 7 murderers), and only 20 learned a trade*"

*T. P. Nunn P. 117.

There are other evidences also proving the importance of heredity. We may mention here the studies of Karl Pearson, Dr. H. H. Goddard and Dr. A. E. Winship.

THE STUDY OF TWINS - To ascertain exactly how far heredity determines the growth of the child several thinkers have made a scientific study of twins. Galton in the beginning of the last century started this line of research and it has been continued down to our own days. Galton adopted the questionnaire method consequently his findings have not as much scientific validity as those of the workers who followed him.

Thorndike's study is by far the more interesting and has greater scientific validity. He applied objective methods to determine the resemblances of twins and siblings (any children of the same parents) in physical and mental traits. He used the statistical device of correlation to state accurately his findings. His findings show

- (1) There is greater resemblance among the twins than among the siblings. The correlation

Karl Pearson traced the family tree of Wedgwood-Darwin-Calton family for over thousand years. It shows that the members of the family have been for five successive generations fellows of the Royal Society of England. There have been many eminent men in that family.

Goddard studied Kallikok family. Kallikok, a soldier, married a feeble-minded girl and later he married a Quakeress of good stock. From the first 480 individuals descended and from the Second 496. None among the former came to prominence whereas a very large number of the second became distinguished officials of the state, tradesmen, doctors, teachers, professors, lawyers etc. holding high status in society. From among the first group 143 were feeble-minded, 46 normal. Morally too they were very low. 36 have been known to be illegitimate, 33 sexually immoral, 24 confirmed alcoholics, 3 epileptics, 3 criminals and 8 keepers of houses of ill fame.

Wimshup studied Edward's Family. Richard Edward married a brilliant woman Elizabeth and he got by her a host of brilliant descendants. Among them were senators, doctors, professors, and business magnates. He later married a woman of average ability and no eminent person descended from the union.

In his ten commendments of German mating Hitler insists that the youth should choose a woman of good descent rather than a beautiful or learned woman. In all Aryan marriages the descent is given the primary consideration. Hence among the Hindus Gotra has such a great importance.

coefficient* for the former was 0.78 whereas the one for the latter was nearly 0.30

- (11) The younger the twins the greater the resemblance among them

Those between the ages of 9 and 11 showed a correlation of 0.89 and those between the ages of 12 to 14 showed 0.70

From the above we may conclude that heredity is important, but the importance of the environment in moulding the life of an individual has not to be minimised. Parson studied siblings. He tried to find out the coefficient of correlation of mental traits as well as physical traits. He found that in both cases the coefficient of correlation was 0.52. Thorndike used the above findings and combining them with his own arrived at the conclusion that similarity and differences in the original nature of men are due to the nature of the germ cells, that this affects body and mind equally and that the influence of environment in the creation of likeness and differences is slight.

Meriman used intelligence tests to find out the coefficient of correlation between younger and older twins.

*The coefficient of correlation is an index that expressed a relation between any two series of measures. The tendency of concomitant variation, the tendency of any two traits to vary together is called correlation. Thus if there be always an increase in the weight of persons with their height, there would be correlation between the two traits of men. There is perfect correlation when the amount of increase in one trait is an exact measure of an increase in the other. This is expressed by the index +1. On the other hand, if the increase in one trait is invariably accompanied by decrease in another, the fact is expressed by saying there is perfect negative correlation between them or the correlation coefficient is -1. When, however, the increase in one trait bears no relation to an increase or decrease in another, the coefficient of correlation is said to be 0. The correlation coefficient varies between +1 and -1.

His findings show that the older twins are less alike than younger twins. This means environment has played its part in bringing out the differences that existed potentially due to heredity. The statistics are given below -

STANFORD BINET 1 Q's

Pairs Compared	No. of Pairs	Coefficient of Correlation
All pairs 5-7 years	47	0.81
„ 10-16 „	58	0.76

ARMY BETA TESTS

All pairs 5-9 years	29	0.68
„ 10-16 „	18	0.67

NATIONAL INTELLIGENCE TESTS

All pairs 5-9 yrs	34	0.80
„ 11-18 „	48	0.87

TEACHER'S ESTIMATES

All pairs 5-9 years	39	0.67
„ 10-16 „	51	0.37

Lauterback's study, however, shows that environment is inadequate to account for the resemblances of twins. The older and younger twins are alike in their mental resemblances and training does not materially affect the resemblance. His general conclusion about the influence of heredity in creating mental differences among individuals is summarised by Sanford thus --

The amount of resemblance in general intelligence varies from $r=0$ for unrelated individuals to minimum of $r=0.90$ for physically identical twins. Immediate

values are formed in accordance with the genetic relations of the individuals. Therefore, there is an increasing degree of resemblance among human beings with an increasing degree of blood relationship among them. *Ergo*, general intelligence is an inherited trait.

These facts would lead us to the view that the limits and the line of growth of any individual are already determined at birth by his heredity.

IMPORTANCE OF THE ENVIRONMENT

There are, however, other facts to show the importance of environment. Candolle of France studied the lives of 552 members of the distinguished academies of Europe—the Royal Society of London, the Paris Academy of Science, and Royal Academy of Berlin. He found that most of the members belonged to rich and leisured class; they had facilities for education, and they received encouragement from enlightened public and benevolent government.

Heyward in *Education and Heredity Spectre* declares that 'psychological heredity' is a spectre which vanishes as soon as one penetrates beyond statistical abstractions to concrete facts of life. The child certainly possesses some inherited tendencies but they are so plastic that they can be moulded almost in any way that the educator desires. With proper education a child may show abilities which his forefathers never seemed to possess.

A few instances may be cited in this connection. The Murray Islanders had no words in their language to count beyond six and referred to large numbers only vaguely, but after receiving training at the hands of the Scots who occupied the island, they developed as good

a mathematical ability as the one possessed by any civilised people. Similarly the education of the Sambals and the untouchables in India is bringing forth surprising results. There are a good many abilities even in the most unpromising child which remain dormant due to lack of opportunities for development.

Helvetius and some of the great educators of the nineteenth century held the view that heredity plays a very negligible part in the child's development. They got philosophic support from the theory of Locke which regards mind as a *tabula rasa* and its development as a process of accumulation and organisation of impressions received from the outside world. The doctrine of innate ideas of Locke's rival, Descartes, seemed scientifically absurd and was also against the democratic belief of the age. The Herbartians believed in education as a panacea for all social evils, they were not to be discouraged in their effort of uplifting humanity by such considerations as limitations of heredity.

LAWS OF HEREDITY

CONTINUITY OF GERM PLASM -- Heredity, however must be more clearly defined. Does a person pass on to his son all his abilities and traits both inherited as well as acquired or does he pass on to him only those abilities and traits which he received from his parents? Weismann and Galton's theory favours the latter view. Weismann's theory is known as the theory of the *continuity of the germ-plasm*. It states that the child is as old as his

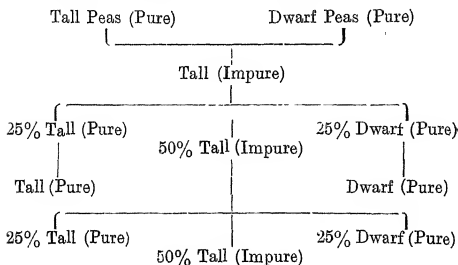
* In the Admission Examination of B. H. U. of 1936 Nanak Ram, an untouchable by caste topped the list of the successful candidates. No one among his ancestors is known to have been educated. In an experiment conducted in intelligence test in the C. H. School the mean score for the untouchables was not much below the one for the children of the higher classes.

remotest ancestors All the traits of his first ancestors are to be found in the child. He does not inherit the modifications of the intermediary generation in those traits The body grows by the multiplication of cells from the germ cell, at a certain stage in this process some cells are set apart, unaltered to form reproductive cells in the new individual. These reproductive cells take no part in the development of the body. It is one such cell that becomes the starting point of a new individual, and thus these cells are continued down from generation to generation. Thus the parent is rather the trustee of the germ plasm, than the producer of the child

Weismann performed experiments with rats For several successive generations their tails were cut off, but each new generation got a tail at birth, that is, it did not inherit the modification in the bodily structure of the previous generation These modifications did not alter the original heredity of the rats They continued to resemble their remotest ancestors In our ordinary experience also we find that the son born to one-handed person has not one hand but two The deformities of a man's face through small-pox are not inherited by the child *There is no transmission of the acquired traits* According to this view both the merits and the demerits which an individual acquires in his life time pass away with him at death, his children have to acquire them afresh by their own effort If the father is an engineer or a musician that is no reason why his son should be so, unless he is brought up with the father. It follows from this that the most civilised humanity may relapse into barbarism if the educational efforts of a single generation be relaxed

REVERSION TO THE MAIN TYPE— The theory of Weismann to some extent is supported by the experiments of Mendel. Mendel experimented in cross-fertilization of

peas It was noted that after some generations of hybrids produced by this process, there was always a *reversion to the main type*, that is, the hybrids tended to disappear. The hybrids of the first generation produced only 50% hybrids, the rest were of the pure types from which the hybrids were produced. This process continued on in each succeeding generation with the result that there was reversion to the pure types. The results are usually presented in the tabular form as follows:—



Experiments in cross-breeding on rats have produced practically the same results as those found in the case of peas. Nature, it seems, tries to preserve the ancient type of ancestry through all changes.

THE LAW OF VARIATION—But if heredity worked so rigidly as never to allow an acquired trait to be transmitted to the progeny, the evolution of the species would have been impossible. Evolution is usually accounted for in two ways; through an *inward urge* of the species to adjust itself to changed environment, and through *chance variation and natural selection*. The former is the view of Lamarck and the latter that of Darwin. Thus according

to Lamarck the giraffe did not originally possess a long neck but it has become lengthened due to a continued effort of the species for generations to stretch its neck in order to reach the leaves of tall trees. Thus the acquired trait of one generation was transferred to the succeeding generation and the long neck of the animal has become a permanent feature of its bodily structure. According to Darwin such variations are not due to some inward urge but are accidental, they are however retained by the species by the process of natural selection and survival of the fittest. In the struggle for existence those only survive who have favourable variations. Through heredity these variations are transferred to succeeding generations. Thus heredity, according to Darwin is rigid and acquired traits are not transferred.

One fact, however, stands out clearly, namely, that the modifications in the original bodily structure as well as the behaviour of the species do occur and that they are transmitted down from generation to generation. If this be so, non-transmission of acquired traits cannot be maintained. The biologist today are not wholly convinced of the view that the acquired modifications do not affect the germ-plasm. A continued inward urge, perhaps, is necessary to bring about such a modification. It is usually seen that some peculiar habits, required by the profession of a man, which he took his whole life to acquire, are much more easily acquired by his son. It cannot be wholly due to social heredity.

McDougall conducted an experiment with rats which is of special significance in this connection. He placed some rats in a tank of water from which they could escape by two paths—the one was lighted and the other was dark. The rats naturally ran towards the lighted path, but they received an electric shock by going through it. They did not receive any such shock

when they went by the dark path. They had to find this out in order to avoid the unpleasant experience. The first generation of rats committed on an average 165 errors before they learnt to go by the right path ; but when the experiment was repeated with the progeny the number of errors diminished till in the twenty-third generation they committed only 25 errors

Godfrey H. Thomson refers in this connection to an experiment of Professor Ivon P. Pawlow Professor Pawlow asserts that conditioned reflexes can be inherited. "Some white mice were trained to run to the feeding place on the ringing of an electric bell, 300 lessons being required. Succeeding generations required in turn 100 30, 10 and five lessons" † The experiment could not be conducted further due to certain circumstances. But Professor Pawlow was confident that no lesson would be required for the sixth generation to run to the feeding place

THE LIMITS OF EDUCABILITY.

The transmission of acquired traits is as yet an open question But whatever be the view that one holds with regard to it, it cannot be doubted that there are some inborn differences in the capacities of different individuals which no amount of education can eradicate. "The most enthusiastic educator," says Mc Dougall, "will hardly maintain that man's superiority to gorilla is wholly due to more advantageous environment and greater educational opportunities It is no less clear that men differ widely in respect of their native capacities."* Schooling cannot do every thing for the child. There are some children who excel in a particular line of activity, there are others who excel in a great many, while there are sad cases of some who do not seem to profit by education at all.

† *Instinct, Intelligence and Character*

* Mc Dougall—*Energies of Man*.

The results of intelligence tests confirm the view that there are congenital differences in the abilities and aptitudes of children. The tests were first used by Binet to find out backward children in the schools of Paris, and latter they were applied on a large scale in America to army men to select officers. The findings of the tests were corroborated by the actual conduct of these men during the War. Further experiments are being made in mental testing, and it is hoped that with proper tests it would be possible to predict pretty accurately the educable capacity of each child and the lines along which he may progress.

As to the final answer to the question, which one of the two factors, heredity or environment is more important, we cannot commit ourselves to any one of the opposing views. The two schools of thought, the Galtonian and the Herbartian, are as nearly opposed to each other as they could possibly be. According to the former, in the development of the child heredity is all important and education plays a negligible part, according to the latter if we educate him properly, it makes little difference what ancestry he has. Both of these views, however, make the external circumstances to be the determining factors of the life of the child. They ignore the child himself as a spiritual entity which has in itself the power of determining its own line of development. "The fundamental truth is," says T. P. Nunn, "that it (the child) is a centre of creative energy which uses endowment and environment as its medium; so that the elements it receives from nature and nurture do not themselves make it what it is, except in so far as they are the bases of the free activity which is the essential fact of its existence"* In the great noise of

* T. P. Nunn, *Education. Its Data and First Principle*, p. 119.

the controversy between nature and nurture the disputants forgot the child himself as an ever growing, ever evolving spiritual power.

This is an inevitable consequence of the materialistic tendency of the age which wants to reduce all life (as in the case of material phenomena) to a formula. Bergson has done a great service to humanity in re-awakening it to a realisation of the fact that life is not bound by laws as apprehended by the intellect. These belong only to the realm of matter. Life is an ever surging, ever creating reality whose possibilities none can predict.

SOCIAL HEREDITY.

The child's development is conditioned by heredity and environment—both of which are correlated factors. Heredity provides whatever potentialities we possess, environment or nurture determines whether they shall be actualised or not. There are certain restrictions to the educable capacity of each child and these restrictions are provided by heredity. The feeble minded child cannot be educated to the same extent as the normal child can be, and the latter cannot be educated to the extent to which the one who has inborn very superior intelligence can be done. The teacher has no control over this hereditary factor.

The teacher, however, can improve the child through determining his social heredity. Social Heredity is a form of educational environment that affects more than a single generation. It includes knowledge, laws, customs, and traditions that mankind passes from generation to generation. "Mankind through countless generations", says Sandiford "has stored his acquisitions of knowledge in books, pictures, works of art and utility, laws and traditions. These become environmental stimuli

of powerful potency to succeeding generation, that may have natural intelligence to profit by them. A parent who surrounds his children with good books and good pictures in a tasteful home, provides them with opportunities for travel and converses with them intelligently is providing them with *Social heritage* of the highest value. This social heritage has to be acquired fresh by each generation. The educational efforts of any generation therefore should not be allowed to relax. The importance of social heredity is so great that without it man would be quite powerless in spite of all his biologically good traits of intelligence. This is under the control of the educators. Parents, teachers, and the state should see that each child is surrounded with the proper environment so that he might benefit himself by acquiring the social heritage which has been coming down from ages.

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CHAPTER III.

NERVOUS SYSTEM

IMPORTANCE OF THE STUDY.— The child is a psycho-physical organism. The educator has to concern himself both with his body and his mind. It is our common experience that bodily conditions have their effects on the mind and mental states likewise determine the movements and internal changes of the body. Though as yet no satisfactory explanation has been forthcoming as to how the correspondence between bodily and mental changes occurs, the fact of the changes cannot be denied. Locke held the view that there is causal connection between the body and the mind. This is the view held by many psychologists to this day. Some philosophers held the view known as psycho-physical parallelism which maintains that the changes in the body and the mind are not causally connected, yet they correspond with each other. Stout, among psychologists, maintains this view. But to assert the fact of correspondence and not to explain it, is to admit one's ignorance about the principle underlying the phenomena of correspondence.

The Behaviourists of our own days have made an effort to explain all the behaviour of any organism without the assumption of consciousness. Now psychology has become scientific rather than speculative. The psychologist concerns himself more with the objectively verifiable forms of behaviour. These are very much determined by internal bodily changes. Education is greatly indebted to this school of psychology for its advancement. Hence the importance of the study of nervous system has greatly increased since the Behaviourist's hypothesis began to work.

PECULIARITY OF THE HUMAN NERVOUS SYSTEM — The nervous system of human beings is a highly *complex mechanism capable of infinite modifications*. Man possesses a very well-evolved brain with differentiation of function among the various parts. But though potentially the human brain has great powers of organising knowledge, and controlling movements of the body, it has no such powers at birth. The child's nervous mechanism at birth is not as complete as that of a moth or a chick. But his nervous system being highly modifiable, he can do all the wonders of the world so as to deserve the name the lord of the creation'

DIVISIONS OF THE NERVOUS SYSTEM.

It is convenient to divide the nervous system into three parts for the sake of study. These parts with their subdivisions are given below —

1. The Peripheral Nervous System
 - A. The Afferent or Sensory Nerves.
 - B. The Efferent or Motor nerves.
2. The Central Nervous System
 - A. The Spinal Cord.
 - B. The Brain
 - Cerebrum
 - Cerebellum
 - Mid-Brain
 - Pons
 - Medulla Oblongata.

3. The Autonomic System—A network of fibres and ganglia controlling the autonomic functions of the body and the glands.

In a work like the present one it is not possible to go much into the details of the working of the nervous system. We shall content ourselves with describing the barest outlines of the functions of the various parts so that our path may be cleared to the understanding of certain educationally valuable concepts.

The nervous system is like a telephonic system with branches extending over all parts of the body. They start from the skin where sense organs are located and go towards the brain. Here the co-ordination of the various telephonic connection takes place. The main group of nerve bundles which runs towards the brain and is connected with the various parts of the body is called the spinal cord. It is located in an opening within the spinal column. There are thirty one pairs of nerve bundles starting from the spinal cord and going towards the several parts of the body. The brain is like the switch board of the nervous system. This switch board, so far as empirical psychology knows it, works automatically.

With this general description of the function of nervous system as a whole, let us proceed to outline in greater detail the function of each one of the parts.

THE PERIPHERAL NERVOUS SYSTEM.

The peripheral nervous system is constituted of sensory and motor nerves. The sensory nerves carry the message from the sense organs which are located at the surface of the body to the central system. Through the sensory nerves the impulse travels from outside inward. Hence they are also called afferent nerves. The message from the brain, on the other hand, is carried by motor or efferent or outgoing nerves. Sensory

nerves, are nerves of knowledge, motor nerves are nerves of action. They are specialised in their functions—the one kind being concerned only with knowledge, the other only with action. Further, through one kind of nerves the impulse can travel only one way and not the other way. The sensory nerves start from the skin and end in the brain, the motor nerves start from the brain and end at the muscles.

THE NEURONE.—The nervous system is made up of neurones. It is the structural and functional unit of the nervous system. The neurone is made up of a *cell body* and its branches—the *axone* and one or more *dendrites*. (See Fig. 1.) The axones are longer than the dendrites and

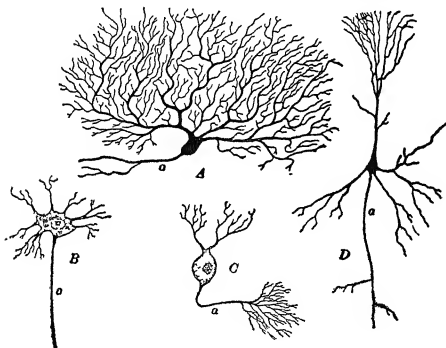


Fig. 1 Neurones

terminate more regularly. The ends of the dendrites look like the top of a tree. It is the function of the dendrites to receive an impulse and of the axon to pass it on to

the dendrites of the next neurone. Their functions can never be inter-changed, hence a current can travel only one way. The junction, where the axones and the dendrites meet is called the *synapse*. The synapse is a one way valve. The nervous current can pass only through axones to the dendrites. There are multiple pre-connections between the axones of one neurone and the dendrites of another. The nervous impulse will travel only the way the connections are formed. These connections are said to be formed by chance in the first instance; later they are strengthened by use. Thus a synapse is a multiple affair. The impulse that travels through the sensory neurone from a touch stimulus may find a way to the muscles of an arm or a leg or another part of the body. Once, however, an impulse has travelled one way through a junction of the neurones, it tends to travel the same way again. The synapse provides an obstacle to the passage of nervous energy any other way than the one it has travelled before. This means that an action can be easily done in the way it was done before; breaking a new ground will always be difficult. This fact has a great educational significance as it is at the basis of all learning and habit formation.

A simple nervous mechanism may be illustrated by the figure given below:—

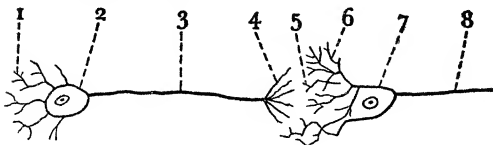


Fig 2 Reflex arc

This consists of 5 parts—the receptors present in the sense organ, the sensory neurone, the synapse, the motor

neurone and the effectors present in the muscle. This mechanism is known as the *reflex arc* and produces a reflex action, the simplest form of the behaviour of an organism. The response follows directly from the preformed or inborn connections that exist between the sensory and the motor neurone.

The most complicated activities of human beings, however, also involve the use of such a mechanism as the one described above. Only more nerve cells work together and a higher degree of co-ordination is required among these cells.

THE CENTRAL NERVOUS SYSTEM

THE SPINAL CORD --The central nervous system is made up of two parts—the spinal cord and the brain. The spinal cord is a bundle of nerves running through the spinal column. The spinal cord extends from the brain to about two-third of the length of the spinal column (See Fig 3). Through this cord a nervous impulse travels backward and forward from the brain to the periphery of the body. When a message is sent to the brain it sends out impulses to the cells in the spinal cord, and they, in turn, transmit the motor impulses to the muscles. Each muscle has its own set of spinal cells in the spinal cord, which acts as a relay station between the muscle and the brain. The spinal cord sends out thirty one pairs of nerves to the various parts of the body. Each of them has sensory and motor nerve fibres.

The spinal cord not only connects the brain with the several parts of the body but it also controls reflex actions. There are direct connections between some sensory nerves and motor nerves. Where the mediation of the brain will delay an action that is required instantaneously to be done, the mechanism in the spinal cord becomes active. A number of our activities are thus controlled by the spinal cord.

The spinal cord also controls all mechanical forms of behaviour in which the organism as a whole is repeatedly

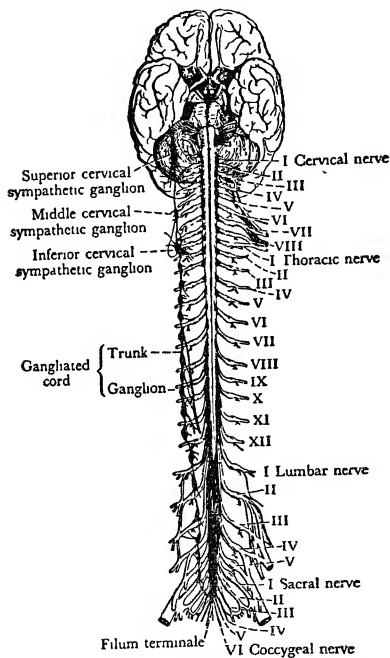


Fig 3 The Central Nervous System

engaged. Such behaviour as walking, running, withdrawing from painful stimulus, typing or playing at the piano—activities that have become absolutely mechanical are in a large measure controlled by the spinal cord. A large part of the daily behaviour of human beings is of this character.

THE BRAIN.

It is rather difficult to describe the structure of the brain, without the help of elaborate sketches. This includes the cerebrum, the cerebellum, the mid-brain, the thalamus and the corpus striatum.

CEREBRUM —The cerebrum controls the sensory and motor nerves. Its cortex is highly differentiated with regard to its functions. The area anterior to the Fissure of Rolando (indicated by the letter R in the figure on the opposite page) is concerned mainly with motor nerves. The brain is divided into two hemispheres. The motor nerves and other areas are duplicated in the two hemispheres. The areas on the left-hand side control the movements of the limbs on the right-hand side and those on the right control the left. The posterior areas both on the right and left half of the cerebrum are concerned with vision. Below them are the auditory centres. The centres are not directly connected with the sense organs but indirectly through the thalamus, which may be described as a way station for afferent or sensory nerves from each of the sense organs.

Besides the areas that can be ascertained to have definite functions there are others about which there is less definite knowledge. Such are the association areas. This is the portion lying anterior to the motor areas, it is concerned with higher mental processes. It is here that experience acquired in the past is retained in nervous tissues. But it has been found in the cases of certain animals that the removal of certain portions does not affect the activities learnt.

The cases of motor and sensory *aphasia* in man, however show that the cortical areas of man cannot be disturbed without seriously affecting the vital activities of the organism. Great disturbances in speech or its total loss may occur due to some injury received in certain portions of the brain concerned with speech. The patient in such cases may be able to express his thoughts through gestures or writing but not through speech. In another disturbance known as *agraphia* one is unable to write. Thus if any motor area is disturbed the person loses the capacity to perform corresponding functions.

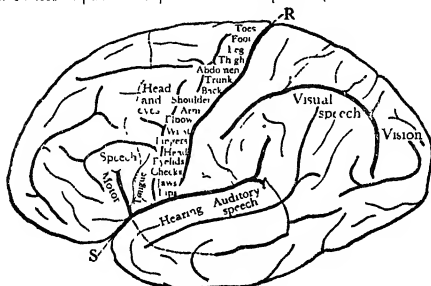


Fig 4 The Brain

There may be aphasia of the sensory kind. If the *visual* centres are affected the patient is unable to recognise things seen or to imagine them in visual terms. Similarly in the case of *Auditory aphasia* things heard cannot be recalled to the mind; the auditory memory is lost. A patient may hear without recognising what is heard. Disturbances in other sensory centres may likewise take place.

During the last days of Lenn such *motor aphasia* occurred to him. He understood what was said to him but could not express his thoughts through his mouth.

This account of the localisation of brain functions may lead us to suppose that the several parts work in isolation from each other. But it is not so, the several parts co-operate and thus increase the efficiency of each. When we are listening to a lecturer, the auditory centres are most active in the production of the knowledge. It would seem that visual and other centres have nothing to do. But the careful observation of the speaker's face is also helpful in grasping the meaning of what he is saying. Similarly seeing and touching co-operate with each other to increase the clear knowledge of objects—our nervous system really works as a unity and the efficient working of any part implies the active co-operation of other parts also.

CEREBELLUM—This is the part of the brain situated below the cerebrum. Like the cerebrum it is divided into two hemispheres or parts. It is connected with the *medulla oblongata* and the pons. The chief-function of this portion is the co-ordination of impulses and the maintenance of bodily balance. When it is taken away the animal is unable to maintain its balance.

The brain is the main agent of co-ordinating the various responses of the organism. It is life's instrument both of knowledge and action. Hence a better development of the brain implies a better ability to adjust oneself to the environment and a better ability to control it. The development of the brain consists mainly in the increase of association paths between different centres. The quality of the brain, of course, is an inherited thing, but we can increase its efficiency through education, culture or training. The brain of an idiot is congenitally defective, but with the best brain inherited one may still remain practically a useless person to society, if the brain has not been properly trained. *f*

THE AUTONOMIC NERVOUS SYSTEM

The *autonomic nervous system* is an off shoot of the *central nervous system*. It consists of a number of centres or ganglia of nervous matter which send out nervous fibres. It is comprised mainly of a double chain of ganglia situated one half on each side of the vertebral column extending from the skull to the pelvis. It also includes ganglia which supply fibres to certain internal organs. One of these ganglia is located in the heart, and another in the stomach. The part of the nervous system located in the head is called the *cranial section*, the one in the chest and the abdomen is called the *sympathetic section* and the one in the pelvic region is called the *sacral section*.

The autonomic nervous system acts in a manner semi-independent of the central nervous system. As the central nervous system controls the skeletal muscles, so this system controls involuntary muscles and glands. The movement of the stomach, the excretion of the waste matter, the action of the heart and the secretion of tears etc. are controlled by the autonomic system.

The sympathetic nervous system and the para-sympathetic (the sacral and the cranial system) work in opposite directions. When the sympathetic nervous system excites any part to activity the cranial and the sacral system tries to inhibit it and *vice versa*. The sympathetic dilates the pupils of the eye and the cranial division controls it, the sympathetic inhibits digestive activities while the cranial division accelerates them. Thus the two control the same mechanism but work in opposite directions. The health of the body, its growth and the arousal of emotions depend on the action of the autonomic system. Hence to know the mechanism that underlies the functioning of this system is very important to the educator.

THE DUCTLESS GLANDS.—At various centres of the body there are glands situated. These are known as ductless glands or glands of internal secretion or endocrine glands. Their action is controlled by the autonomic system. They manufacture certain chemicals and discharge them directly into the blood. This usually accelerates and controls vital processes. The important ductless glands are—the *thyroid*, the *adrenals*, the *pituitary body*, and the *gonads*.

THE THYROID GLAND.—The thyroid gland is situated in the neck above the wind pipe. The gland secretes—a chemical known as thyroxin in which the principal ingredient is iodine. This secretion seems in a marvellous way to control the speed of living. When the chemical produced by these glands is discharged into the blood, more oxygen and food material are consumed and more energy is liberated, the individual lives faster; he thinks, feels and acts more quickly. When there is less discharge of this chemical into the blood, the body does not develop well. Thus when more energy is needed to the system, it begins to manufacture in greater quantity the chemicals, producing the energy.

Disorder in the functioning of this gland results in the retardation of the physical or the mental growth of the child. Thus cretinism—stunted bodily and mental growth is caused whenever there is insufficient supply of thyroxin to the system. This disease is artificially cured by the daily feeding of a little pallet of extract from the thyroid gland of a sheep. But this artificial supply of the thyroxin has to be constantly maintained, otherwise its lack will immediately result in the deterioration of body and mind.

It is found that such mental diseases as feeble-mindedness and retardation at times arise due to the improper

functioning of the thyroid gland. These diseases are curable through an artificial supply of thyroxin. "Up to the present time," says Seashore, "we have been taught that feeble-mindedness is incurable. It has certainly proved resistant to educational treatment. But if cretinism, one of the most extreme forms of feeble-mindedness can be remedied in some cases, may not the situation be very much more hopeful for those who are feeble-minded or retarded in a lesser degree. It may be that many of the cases of retardation in our schools are due to diseases of this gland and are amenable to physical treatment"*. He points out further that goiter troubles—a disease caused by deficiency in the functioning of thyroid, may be avoided by feeding iodine to children, similarly such diseases, as arrested development, degeneracy of mental faculties can be remedied by the stimulation of proper organs of internal secretion. This stimulation may, at times, be caused not by feeding chemicals to children but externally also. Experimentally it has been determined that by gently stroking on the surface of the neck the secretion from this gland may be facilitated. Some of the mental disorders may be cured by a proper massage of the neck and the portion above it.

THE ADRENAL GLANDS :—These are two glands, each lies on each of the kidneys in contact with its upper surface. Their study is important from the point of view of emotions. They manufacture a substance called adrenalin and discharge it directly into the blood. This stimulates the nervous system and thus prepares the organism to meet any emergency. The adrenals become very active at the arousal of an emotion. Hence they are known as glands of combat, emergency and preparedness. The more pugnacious an animal is, the more adrenalin it has. The presence of a large quantity of this substance predisposes an individual

*Seashore — *An Introduction to Psychology*, P. 317.

to emotional moods. Adrenalin, extracted from one animal and injected into the blood of another produces the same effect as is produced by adrenalin naturally manufactured.

OTHER GLANDS — Besides the glands described above there are other glands the function of some of which until quite recently was unknown to the physiologists. They were thought to be simply remnants of a previous stage of growth but now they are discovered to have very important functions in the maintenance and growth of the body. The *pituitary body* is situated at the base of the brain below the front part; it controls the growth of the bone. The *pineal gland*—called the gland of adolescence and puberty—also lies at the base of the brain towards the back; it controls sex development. The *gonads* or the sex glands control the development and functioning of sex as well as emergence of secondary sex characters.

THE LAWS OF NEURONE ACTION

Sandiford has formulated four laws of neurone action. As in all our learning process nervous activity is involved, it is very important for educators to make themselves familiar with these laws. They are at the basis of all learning. The Laws are as follows:—

1 *The Law of Expression* —“Every stimulus of a sensory neurone must have some result, it cannot come to nothing.” The result may be visible or invisible. At times the stimulus results in some overt activity, at others it may result in some glandular secretions bringing an emotional mood or other bodily changes. With reference to the same fact James, while talking of habit, says, “We are spinning our own fates, good or evil, and never to be undone. Every smallest stroke of virtue or of vice

leaves its never so little scum. The drunken Rip Van Winkle excuses himself for every fresh dereliction by saying 'I won't count this time!' Well, he may not count it, but it is being counted none the less. Down among his nerve-cells and fibres the molecules are counting it, registering and storing it up to be used against him when the next temptation comes. *Nothing we ever do is, in strict scientific literalness wiped out*.* Every stimulation of the nerves must result in something, it may be obvert or invisible to the eye.

2. *The Law of Least Resistance*—The line of activity chosen by the neural energy to work is the one along which connections between neurones already exist. Habitual use of a nervous tract modifies any inborn connections in such a way that it becomes the preferred path and then it becomes difficult to take to any new one. Thus habits become second nature. The Law of Least Resistance is at the basis of all habit formation.

*The fact that behaviour is a response to a stimulus has been expressed symbolically by the formula $S \rightarrow R$. According to the Behaviourists even the most complex forms of behaviour can be analysed in terms of the $S \rightarrow R$ formula. The immediate response to a stimulus as symbolised by the above formula is called the unit of behaviour. According to Herrick it includes the following six processes:

(1) Stimulus.—This is something that impinges itself upon the organism from outside.

(2) The excitation.—The sense organs which are the nerve endings on the skin become excited by the physical stimulus coming from without.

(3) The afferent transmission.—The excitation goes from the sense organ towards the spinal cord or the brain.

(4) The central adjustment.—Here the inward going current is transferred to an efferent pathway so that it may result in an action.

(5) The efferent transmission.—This consists of the motor nerve which brings the excitation to the organ of response.

(6) Response.—The mechanism for actual response consists of muscles, glands etc. The motor nerves move them to actual action.

The above unit of behaviour is known as the simple reflex arc. Upon this, according to Behaviourist all complex forms of human or animal behaviour are built.

* William James 'Talks To Teachers', p. 73.

3 *The Law of Inborn Connections* —According to this law due to the inborn connections between sense organs and certain motor nerves the latter will be active whenever the particular sensory nerves are excited. Where such inborn connections exist the activity of the nerves automatically takes this line. Thus if we are pricked on the side, it is the nearest hand that first comes to the aid and removes the painful stimulus. It is only when the hand cannot respond that some other organ might work. Reflex activity is directed by this law.

4 *The Law of Acquired Connections* —It says "When any neurone group is stimulated the nervous impulse will be transmitted to the neurone group with which it has been most nearly connected, which has been aroused by it most recently, most frequently, most energetically, for the longest time, and with the most satisfaction to the individual." This law is at the basis of all learning. This is also known as *the law of associative learning*. All Laws of Learning may be said to be derived from this one law of Neurone Action.

- 1 Dumville *Fundamentals of Psychology* Chap. II.
- 2 Sandiford *Educational Psychology* Chap. V.
- 3 James. *Talks To Teachers*. Chapters VI and VIII.
- 4 Morgan *Child Psychology* Chap. II.
5. Morgan and Gilliland. *Introduction to Psychology*. Chap. II.

CHAPTER IV

HUMAN BEHAVIOUR.

The educationist studies the behaviour of the child. He has to study the springs of that behaviour, its general characteristics, the mechanism of behaviour and its different kinds. He has further to study its growth and development and the ideal of the highest kinds of activities that are comprehended in human behaviour. Psychologists have noted certain broad features of behaviour of all living organisms. We find a gradual evolution in the forms of behaviour of living organisms as we ascend higher up in the scale of evolution. The life of man represents the highest rung in the scale, hence his behaviour is most evolved.

NATURE OF BEHAVIOUR

Behaviour has been conceived of in two different ways by the two opposite schools of psychologists of the present day. According to the Behaviourists, behaviour is, in the last analysis, a response to a stimulus. According to the Harmonic School, behaviour is always purposive.

BEHAVIOURIST'S ACCOUNT OF BEHAVIOUR —The following are some of the important characteristics pointed out by Peter Sandiford, following the Behaviourist school.

(1) Behaviour is the response of the organism to some form of stimulation. The organism lives only through making proper responses to the stimulus that excites it to activity. When the organism ceases to make proper responses to varying stimuli, it perishes or is destroyed. "Life," as Herbert Spencer said, is the

continuous adjustment of internal relations to external relations."

(2) Behaviour is determined by the environment in which it takes place. "An organism," says Sandiford, "is no self-starting mechanism, its reactions are always started by some stimulus outside of itself." The potential power of making responses of an organism is determined by heredity but without the proper environment the particular response for which the organism has a capacity will not come

(3) But the importance of the innate capacities also should not be minimised. The kind of behaviour an organism exhibits is dependent on its structure and construction as well as on the nature of the exciting stimulus. The stimulus being the same, different organisms will behave in different ways. The twilight that sends the rooks to nests sends the fox to prowl.

(4) The grade or level of behaviour is dependent upon the grade or level of biological development of the organism. The greater the biological development, the higher is its behaviour. Thus the behaviour of a worm, an insect, a fish, a bird, an animal, a man show increasing complexity. As the biological structure of the organism becomes more and more complex, its behaviour too shows increasing complexity. Man biologically is the most evolved being, consequently his behaviour is the most complex.

(5) Behaviour as a rule shows increasing complexity with age. The behaviour of the adult is more complex than that of the infant. The child is prompted and guided in his activities mostly by his reflexes and instincts, the adult, on the other hand, makes an increasing use of his intelligence. There is a gradual modification of the innate dispositions, and acquired dispositions begin to control and direct conduct.

BEHAVIOUR ACCORDING TO THE HORMIC SCHOOL —

The above account of behaviour, though true in its own way, does not reveal clearly the purposive character of all vital activity. All organic activity is purposive, it is this characteristic which differentiates the activities of the living organism from the reactions of dead matter. There are certain characteristics that clearly mark the purposiveness of organic behaviour. These are, as McDougall, points out, certain spontaneity of movement, persistence of activity, variation of the direction of persistent movement, cessation at the attainment of the goal, preparation for new situation and improvement in the effectiveness of behaviour as experience grows. These characteristics are present in animal behaviour as well as in the behaviour of man. We have reasons to believe, the behaviour of lower animals is also characterised by the above marks. All this shows the presence of a Mind in actions called behaviour. It is the expression of what Schopenhauer called the *Will to live* or the *Elan Vital* of Bergson. *The Will to live*, its eternal desiring is really responsible for all the activities of the living organism.

Human beings never act except with certain purposes. There is a scale of degrees of purposiveness. Even our instinctive or impulsive actions are characterised by purpose. "By reflecting upon a variety of actions, we may realise that our action may be arranged in a scale, at the upper end of the scale may be put such actions as are most deliberately purposive, the goal and the means having been pondered, developed in imagination, and deliberately chosen among various alternative possibilities, before overt action began. Lower in the scale would be those actions the goal and the steps towards which we have thought of perhaps clearly, but without pondering and choosing. Lower still are such actions as we perform with only a vague and sketchy foresight of the goal and the means, or perhaps the goal only. And, at the lowest end

of the scale of purposiveness, would be such impulsive actions as the snatching of the child from imminent danger”⁴

Thus we find all human activity is purposive. Even the reflex and instinctive activities are purposive by nature. Hence we have reasons to infer from this that every activity of the child has a purpose—it may be or may not be present to the consciousness of the child. Every activity is in some way conducive to the development and better manifestation of his life. Again we have also to see that as life evolves, as the child grows into an adult, his purposes become clearer to him and they are better organised. In the most evolved individual, we find a unity among all his actions. He is conscious of his life’s mission. His activities are guided not by instincts or impulses but rather by carefully formed habits, sentiments, reason and forethought.

NON-VARIABLE AND VARIABLE BEHAVIOUR

All behaviour can be classified into non-variable and variable. The non-variable behaviour predominates in the life of animals, birds, insects and worms. The lower the species the greater is the non-variable form of behaviour, the higher the species the larger is the part played by variable form of behaviour in its life. This, in other words, means that whereas the lower organisms live mainly through the help of the inherited mechanism, reflexes and instincts, man lives and progresses through learning. Reflexes and instincts play an important part in the life of a man also, but it is very small as compared with the part played by acquired forms of behaviour. Without the latter a man would not be able to fight out his battle of existence and would be at a great disadvantage as compared with other animals. W. K. Brooks in *Foundations of Zoology* says, “Measured by all the standards of the brute world man seems almost pitifully unfortunate

⁴McDougall *An Outline of Psychology*, P. 48

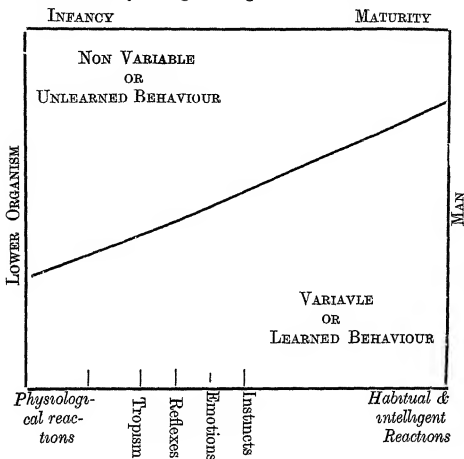
Nature has provided other animals with fur coverings for protections against cold, with migratory instincts which lead them to avoid unfavourable environment, with teeth and tusks and claws for offence and defence. Or, if Nature has not provided these things directly, she has at least provided tendencies to variations that have resulted in their development. Man on the other hand, lacks both the factors and the tendency to variation which might produce them. And yet the lack of a natural covering for the body, the lack of natural weapons, even the lack of proclivity for variation have all been positive forces in human progress. The endowments that man lacks have been too easy a means of survival and progress. Nature has always set a premium upon successful surmounting of difficulties. Throughout the entire range of life we find that the advancement has been co-related, not with what would seem at first glance to be most favourable condition, but with conditions that have offered serious obstacles to life."* "Every child," says J. W. Powell, "is born destitute of things possessed in manhood which distinguish him from other animals. Of all industries he is artless, of all institutions he is lawless, of all languages he is speechless, of all philosophers he is opinionless, of all reasonings he is thoughtless, but art, institutions, languages, opinions and mentations he acquires as years go by from childhood to manhood. In all these respects the new-born babe is hardly the peer of the new-born beast, but as the years pass, ever and ever, he exhibits his superiority in all the great classes of activities until the distance by which he is separated from the brute is so great that his realm of existence is in another kingdom of nature."†

The quantitative relation between the variable and non-variable forms of human behaviours as well as between

*Bagley *Educative Process*, P 18, 19.

†Ibid, p. 15.

the forms of behaviour of lower organisms has been aptly represented* by a diagram as given below —



The relative importance of variable and non-variable forms of behaviour of lower organism and of man can be seen by the vertical lines of the diagram. As the organism proceeds in the scale of evolution the importance of non-variable forms of behaviour diminishes till it becomes very small, as it reaches the highest rung of the ladder—man. But even in the case of man there still remains a residue of non-variable form of behaviour. The diagram may be read from the bottom up. This will show how, as the child

*Sandiford . *Educational Psychology*,

grows in age, the non-variable form diminishes and the variable form increases in quantity. In infancy the non-variable plays an important part but in maturity the variable form or learned behaviour, habits and intelligent reactions become very important. The non-variable forms are physiological reactions, tropism, emotions, reflexes, instincts, and the variable forms consist of habitual and intelligent reactions.

SIMPLE NON-VARIABLE REACTIONS OF THE ORGANISM

Simple inherited reactions of the organism are physiological reactions, tropism, emotions and reflexes.

PHYSIOLOGICAL REACTIONS:—These are practically perfect at birth and very few changes occur in them. They are concerned with directly keeping us alive by taking care of the intake and digestion of food, the elimination of waste products, and oxygenation and circulation of blood. Even some changes occur in physiological reactions of man's body. But they are so few as to be entirely negligible. As educationists we are not concerned with them, as training can hardly change them.

TROPISM —The reactions of the simplest forms of organisms, some psychologists—particularly the behaviourists, call tropism. According to Loeb, the attraction of the moth to light is nothing more than the chemical effect of light, an effect similar to that which forces the stem of the plant at the window towards the source of light. He asserts that all instinctive acts even of higher animals are of this nature. This, however, is a disputable point. This pattern of reaction is also remarkably stable and non-variable. But as they play a little part in human behaviour, they need not detain us.

REFLEXES --The reflex reaction involves only a few nervous co-ordinations. In a simple reflex, a sense organ, the sensory nerves, the nerve centre, the motor nerves and muscles are involved. The stimulus received by the sense organ is carried by the afferent nerves to the nerve centres. This stimulates the motor nerves going out to the muscles. Thus if a speck of dust gets into one of my nostrils the sense organ at the skin is excited, the excitement rapidly goes inward and according to a pre-established or inherited arrangement the response in the form of a forceful sneeze follows.

CHARACTERISTICS OF REFLEXES - Woodworth assigns the following characteristics to reflex actions: they are very quick in their operation, they are very definite, a certain stimulus giving rise to certain response in an arbitrary fashion, they are involuntary and often entirely unconscious, they are permanent because they are native or inherent in the organism, they are unlearned and they are always ready for action.

IMPORTANCE OF REFLEX ACTIONS

The child's life is said to be made up of reflexes. Some of the reflexes in course of time become modified by the process called conditioning of the reflexes. They are not so rigid, according to some psychologists, as Woodworth makes them out to be. "Careful study of new-born infants," says Morgan, "shows that many of the reflexes that have been attributed to them are not present, that the reflexes that do appear are very uncertain in their operation, that some reflexes that appear at birth or soon thereafter, disappear later, and that the demonstrable reflexes do not operate in the mechanical and unfailing manner that our text books describe"* He thinks, the assumption that reflexes are dominant in the behaviour

*Morgan *Child Psychology*, P 39

of human beings as they are in the lower animals, is unwarranted. Some of the reflexes are the product of the child's reaction with environment.

TYPICAL REFLEXES —There are many reflex connections (about fifty) in the body of human beings. We may mention a few. —

- (i) *The pupillary Reflex* The size of the pupil automatically changes when a bright light enters the eye. It is one of the earliest reflex actions of the child.
- (ii) *The blinking reflex* If one makes a quick movement of the hand in front of a person's eye, he would wink at once.
- (iii) *Sneezing reflex* If some irritating thing gets into our nostrils sneezing at once occurs.
- (iv) *Patellar or knee-jerk reflex* A tap below the knee will cause it automatically to jerk. This occurs in the case of a frog whose brain has been removed.

Other reflexes are grasping, crying, vomiting, yawning, blushing, laughing, coughing, weeping, salivating, perspiring, etc.

These reflexes are nature's devices to protect the organism from sudden injury.

CONDITIONING OF THE REFLEX Many reflexes change and are modified by environment. This modification of the reflex through the environment is called conditioning of the reflex. Pavlov's experiment with his dog is a classic illustration of the conditioned reflex. He showed the dog a piece of meat and noted that there was secretion of the saliva. If he rang a bell, it did not result in any increase in

the secretion. Then he rang a bell each time he showed the dog the meat. After some time he found that the salivary secretion began to take place at the ringing of the bell, with which this act was not at all originally connected.

The child's original activities are also similarly being conditioned at each moment. The child loves the dog, but when once it howls at it or bites, it begins to be 'frightened of it for ever. The child may begin hating a certain kind of food because once it was mixed with something bitter. The child is not originally afraid of the dark but he may acquire fear for darkness, because of his having been once injured in the dark. In this way countless tastes and attitudes are being created in each individual through the conditioning of the original likes and dislikes.

The knowledge of this process of conditioning of the reflex is quite important to those who have to deal with young children. It also points to the importance of the experiences of the infant and the child in preparing him for later life. 'If a person has bad temper, he has learned to get angry at trifles, if he hates arithmetic, he has been taught to hate it, if he tells lies, he has learned to tell them, if he has a happy disposition he has been taught to be happy, and if he is persistent, he has been taught to be persistent.'* Thus according to some psychologists all learning is a conditioning of reflexes.

References :—

1. Bagley—*Educative Process* Chap. I
2. Sandiford—*Educational Psychology* Chapters V and VI.
3. Morgan—*Child Psychology* Chap. II
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CHAPTER V

INSTINCTS

In a previous chapter we have pointed out that the growth of the personality of the child is determined by two conditions—heredity and environment or his native endowments and education. The child inherits from his parents, his bodily constitution as well as certain mental traits. The primary native mental endowments of the child are his reflexes, instincts and innate tendencies. The human child like the young one of every other creature is born with instinct and innate tendencies, and education is a process by which these native endowments of the child are so developed and modified that he becomes able to adjust himself effectively to changing environments in which his life has to be passed. In the present chapter we shall try to investigate into the nature of the native endowments of his mind, so that we might know in what way they may be utilised for the purpose of education or what the educator ought to do with them.

NATURE OF INSTINCTS.—We have said above that the native endowments of the child's mind are his instincts and innate tendencies. What is the nature of these? An instinct is a mental disposition, which is inherited by an individual from his ancestors. It is a racial habit coming down to us. A species faced by certain situation of the environment, for its own self-preservation, develops certain characteristic habits of action which are transmitted down from generation to generation. There is "will to live" in every living being and thus "will to live" underlies all the physical and mental developments of an organism. In the evolution of the species, favourable traits—physical

or mental that are acquired by a generation, are transmitted to the next. Thus favourable modes of behaviour become racial habits or instincts. When a particular stimulus is presented to a living being it invariably acts in a characteristic way. Hence instincts or instinctive acts are sometimes called *primary automatic acts*.

An instinctive act is very much like the act of a machine which, once we set to operation, begins to work of its own accord. There seems to be absence of intelligence in an instinctive act. Thus when a chick sees a white small round object before it, it at once begins to peck at it. At the sight of the object, its inherited mental mechanism is stimulated and it begins to work quite automatically. Similarly it tries to run away when a dog approaches it. It is not experience that has taught it to do so, but it is an inherited tendency that makes it do it. Hence it is often said that instinctive acts are blind.

INSTINCTS AND REFLEXES — Some writers, notably the Behaviourists, call instincts "chained reflexes". Between an instinctive act and a reflex act, such as sneezing, or scratching the foot when a fly sits on it, they see no essential difference. The one is as automatic as the other. In the case of a reflex act a stimulus is presented to an organism and there is an immediate response; so too is the case with an instinctive act. The only difference, they say, between the two is that whereas the reflex act is simple, the instinctive act is very complicated. Many movements have to be made before the end is achieved. These movements are connected with each other, hence the instinctive act is called "chained reflexes".

Prof G. F. Stout and William McDougall criticise the above view. Instinctive behaviour is not blind or an outcome of chained reflexes. It involves the *use of intelligence*. This becomes evident from the fact that

an instinctive behaviour becomes *modified through experience*, whereas a reflex act which is purely mechanical is not so modified. There is *appreciation of success and failure*, the activity is *directed to an end* and it ceases as soon as the end is achieved. For a reflex act to take place an external stimulus is always necessary, the instinctive act may be quite *spontaneous*. A dog may have been lying before the door of a house for a while, suddenly it gets up and starts running in a certain direction. Such spontaneity is entirely absent in a reflex act. It is the characteristic mark of instinctive behaviour. To suppose that instinctive acts do not involve the use of intelligence, is to think that there are two principles that guide the activities of men and those of other animals. Thus we introduce a discontinuity in biological evolution. Experiments performed on rats, cats and monkeys by keeping them in traps go to prove that instinctive behaviour is modified through experience; there is in it an appreciation of success or failure, and that the activity is directed to an end. Had instincts not involved intelligence their modification through experience would have been impossible.

DEFINITION OF INSTINCT —It is now, however, generally admitted that instinctive acts involve the use of intelligence. They also involve besides a feeling-tone. There is a characteristic emotion that accompanies every instinct. McDougall defines an instinct as "an innate disposition which determines an organism to perceive or react in a certain way to any object of a certain class and to experience in response a certain emotional excitement and impulse to action which finds expression in a specific mode of behaviour in relation to that object." On the cognitive side the perception of a certain situation or arousing in the mind of a peculiar chain of ideas is necessary; on the affective side there is a characteristic emotion with

the tendency to feel, and on the conative side the individual has an inherited disposition to act in a peculiar way. Thus when a child sees a dog running at him he carefully watches him, then the emotion of fear is aroused and he tries to run away. All this composite experience is due to the arousal of the instinct of flight

PECULIARITY OF MAN'S INSTINCT —All animals have instincts. It is, however, commonly said that a man has no instinct. By saying so it is signified that a man is a superior kind of being. It is other animals which are at the mercy of blind tendencies; man works through intelligence. His acts are determined by forethought

The popular way of thinking is, however, unscientific. Instincts are as much a part of the native endowments of the human child as they are of the young ones of other animals. But they are much more modified in the case of man than in the case of other animals. "The native endowment of the higher animals," says McDougall, "has not been swept away from the human species to make room for an endowment of an altogether new order. Rather, the native endowment of the human species is that of the higher animals carried to a pitch of differentiation and plasticity with, possibly, some specially new additions."

The child is born with instincts but *they are very plastic*. A brood of hen begins to search for its food and to peck at small objects almost as soon as it is out of its egg. But a human child is absolutely helpless at birth. Within the first months of its birth the young puppy or kitten learns all that it needs to carry on its existence, but the human child requires years. It takes usually one year to be able to stand, two years to be able to babble and several years to become self-supporting. *The child does not inherit a highly finished mental structure as is*

the case with the young ones of other beings. This fact which may be regarded as a point of weakness in the constitution of the human babe is just a point of strength. The indeterminateness of the child's native tendencies enables it to learn more from experience than is possible for the animal. The tendencies become modified in the way as would suit the needs of the environment. The very educability of the child depends just upon this one fact, that at birth it is perfectly helpless and has no highly finished native mechanism to enable it to deal effectively with the environment. Had the inherited tendencies of the child been as specific as are those of other animals, modification of them through education would have been impossible. Hence he would have remained a life-long brute.

PRINCIPAL INSTINCTS OF MAN

There is no general agreement among psychologists as to the number of instincts. Some writers think that there are two or three fundamental instincts, others think that there are scores. According to McDougall there are thirteen instincts common among animals, and man has an additional instinct of laughter. Many of the inherited tendencies which other writers e.g., James, have classed among instincts, McDougall calls innate tendencies. The distinguishing characteristics of an instinct are its attachment with a specific emotion, and manifestation in a definite mode of action. The principal instincts according to McDougall are the following, with each of which is connected a specific emotion as noted against it —

NAME OF INSTINCT	EMOTION ACCOMPANYING THE INSTINCTIVE ACTIVITY
1. Instinct of escape or flight.	Fear, terror, fright, alarm.
2. Instinct of combat (Pugnacity, aggression).	Anger (rage, fury, annoyance).

NAME OF INSTINCT	EMOTION ACCOMPANYING THE INSTINCTIVE ACTIVITY
3. Repulsion (Repugnance)	Disgust
4. Parental instinct	Tender emotion, love
5. Appeal	Distress
6. Pairing (mating, reproductive, sexual)	Lust
7. Curiosity	Curiosity, wonder
8. Submission (self-abasement)	Negative self-feeling
9. Assertion (self-display)	Elation, positive self-feeling
10. Social or gregarious instinct	Feeling of loneliness.
11. Food seeking instinct	Appetite or craving in a narrow sense
12. Acquisitive (hoarding) instinct	Feeling of ownership
13. Construction.	Feeling of creativeness
14. Laughter	Amusement

The above list is generally accepted as valid by educational writers. The instincts are sometimes put in three groups—the self-instincts, the sex instincts and social instinct. Those instincts (e.g., food-seeking, curiosity, pugnacity, flight etc.), which are useful for the preservation of an individual's life or for its effective functioning are called self-instincts. The sex instincts—the pairing and parental, are concerned with the perpetuation and maintenance of the species. The gregarious instinct, the instincts of submission, assertion, laughter—those that prompt an individual to live as a member of a group and also enable him to deal with other members of the group properly, are called social instincts.

The above instincts are inherited by the child, but they do not begin to function all of a sudden. The self-instincts naturally become operative at the earliest period, the child begins to seek its food soon after it is born. Then gradually as the child grows, the instincts of curiosity, repulsion, flight, pugnacity, constructiveness and hoarding manifest themselves. Then arise the gregarious instincts; and in adolescence the sex instincts show their signs. It is the duty of the educator to know the time when an instinct comes in full vigour and to direct his effort in such a way as to modify it properly or utilize it to enrich the child's personality. William James has drawn our attention to the fact that instincts die of disuse. Though it may not be true that through disuse an instinct may altogether disappear, it is at least certain that there is a period in a child's life when certain of his instincts show themselves in full vigour and if they are not properly handled at this time much harm may arise to the personality of the child. The instinct of curiosity, for instance, is very strong in infancy and if at this time the child's curiosity is not properly nourished, it would not show itself keen afterwards and the educator will thus lose the most important agent for the education of the child.

Again, there are certain instincts that appear late in life. These are called by William James delayed instincts. The child develops interests in objects relating to them only in the period of their maturity. Hence it is only at this stage that knowledge about them needs be imparted. Educators often commit the mistake of prematurely thrusting upon the attention of the child studies for which his mind is not prepared.

This usually results in creating a permanent disgust in the child's mind with regard to those studies. He begins to hate the educational authorities and institutions. Sometimes he conceives wrong notions about many things

which it becomes difficult to erase. There is much value in the pedagogical doctrine of Rousseau which says that nothing should be taught to the child to-day that can be postponed till to-morrow.

PRINCIPLES OF MODIFICATION OF INSTINCTS

The development of the personality of the child, we have said before, depends upon the modification of his instincts. How is this modification to be brought about? How, in other words, are we to utilize the instincts for the purpose of education? To answer this question we shall first point out generally the principles underlying the modification of instincts or innate tendencies and then deal with the more important ones separately and point out how they can be utilised for the purpose of education.

Modification of instincts takes place in the first place through the agency of pleasure and pain. Modes of behaviour which yield pleasure become fixed in the mind or in the nervous system, while those that yield pain tend to disappear. This law is known as the *Law of Hedonic Selection* or the law of subjective selection. By the working of this law relatively blind and undirected activities become generally guided into definite tracts, each advance paving the way for future progress. When the father beats a child for doing some mischief or when he gives him a toy for behaving well, he relies upon the working of this law for the purpose of rooting out or inhibiting undesirable traits of his behaviour and stamping in those that are desirable. Similarly the teacher also relies upon the working of the law of hedonic selection when he praises a child or awards him a prize for gaining high marks in a test or censures his conduct or punishes him when he teases a weaker boy.

Another principle about the modification of tendencies is *inhibition*, that is, if an evil tendency is checked for a given period it may disappear. We have already pointed this out before as the law that instincts die out of disuse. This, however, does not always occur, and it sometimes happens that if an instinct has been kept repressed for a long time it breaks out into volcanic eruption when it finds opportunity. Strong instincts like pugnacity and sex, when repressed, usually manifest themselves in very undesirable ways.

An instinct or an innate tendency is also modified by its being *opposed by a tendency of a nature incompatible with it*. When the one is active, the other to a certain extent is suppressed. Thus envy is modified when opposed by 'esprit de corps'. For the victory of his team a player in a foot-ball match suppresses his individuality and allows his comrade to win the applause by scoring a goal. He might be otherwise envious of him but this tendency is held in check or is modified by the arousal of another tendency incompatible with it.

A tendency may be modified by a change in the environment or by *redirecting it to the worthy ends*. Thus the instinct of acquisition which is possessed in some degree by all children may be directed to the collection of specimen, pictures and stamps. It will thus provide a stimulus to the child's taking interests in the several subjects of the curriculum. It can also be directed to taking care of the objects that belong to child's group or to the school.

SUBLIMATION OF INSTINCTS :—The process of redirecting instincts to worthy ends is sometimes known as sublimation of instincts. The word is particularly used with reference to redirection of the energy of the sex instinct. We can compare the flow of human energy to the flow of

water through the drainage system of a country. "The natural valleys", says Thomson, "down which the water rushes are the natural instincts, untouched by engineering, by education. In the animal these channels are fixed, hardly changeable. But in man the soil is more suitable for canalising some of the river courses, diverting others, possibly blocking and damming others." An instinct is said to be sublimated when the energy behind it is utilized in activities that are socially valuable.

Modern Psychology is every day bringing out facts which open our eyes to the harm which we do to children by repressing their instinctive urges. Mere repression of an instinct seldom does good to the individual or society. It is like building a wall across the valley without making any provision for the piled up waters being some how drained away. The piled up waters sometimes break the dam and in such cases more harm is done to the personality of the individual than the good that could have ever been achieved by the damming processes. At times the waters find out some secret ways to get out. In such cases the individual develops undesirable or criminal traits of personality. But where the damming succeeds, the personality becomes poor through lack of fire or energy. Thus it is through sublimation alone that the energies of the growing boy are properly utilized.

To take an example, the instinct of pugnacity usually manifests itself in anti-social activities. But the same instinct can be redirected to socially useful ends. It can be diverted from quarrelsomeness and fighting to boxing, to games, to solving difficult problems in mathematics and beating others in studies. Similarly the instinct of sex is sublimated through employment of children in music and art, poetry and other aesthetic pursuits. Religion is also believed to be one of the most important means of sublimating the sex instinct. The emotion of love connec-

ted with this instinct which is directed to human beings and which at times brings unhappy results, is by religion directed to God, who is worshipped by the devotee in the form of the Father, the Mother, or the Eternal Friend

We are indebted to Psycho-analysis for bringing to prominence the idea of sublimation. The repression of an instinct brings about the formation of complexes in the unconscious or the hidden region of our minds. The presence of a complex in the personality of the child leads to very undesirable results. All the misery of society is due to the reactions of such complexes. We shall deal with this problem in a separate chapter.

PUNISHMENT IN EDUCATION — Punishment is often regarded as an effective means of curbing the evil tendencies of children. But from what is said above it is obvious that it is wrong to make a frequent use of punishment. "Punishment," says Schleiermacher "must be an ever diminishing factor in education." This is the principle that all sound pedagogics should follow.

Unwise punishment may promote the very faults it is seeking to cure. As Stern points out, "If too frequent and too severe, it may drive the child to his only means of defence, viz shyness and falsehood, and thus awaken or at least strengthen a tendency to secrecy and obstinacy."

Of course, there are certain circumstances under which punishment becomes very necessary and cannot be dispensed with. Stern has put these into three categories: *to prevent the child from doing unprofitable actions*, whose foolishness he cannot understand or appreciate, *to break his obstinacy*, so that he may be trained in self-control and submission to authority; *to cure him of moral vice*, that is, such undesirable traits of character as greed, untruth, cruelty etc.

There are many things which the child cannot be allowed to do "The child must not suck his finger, make ugly faces, dirty a room just cleaned, not take as toys, throw down or pull to pieces articles of value, such as watches and glass ornaments etc, nor must he walk on the grass or lean out of a window" Here punishment is necessary to prevent the child from doing any foolish act It serves here as a deterrent A burnt child dreads the fire, hence an association of any form of activity with pain will inhibit its expression But it will no longer serve this purpose if it is repeated too often "If a child is entirely surrounded by a code of prohibitions, so numerous as to make transgression well-nigh inevitable and is severely punished for each lapse, he is no longer able to associate the pain of the penalty with definite actions, and so learns to avoid them He only becomes hardened instead of showing the hoped-for reactions "

The child has at times to be punished for wilfulness and defiance of authority. But here too it must not be forgotten that "Self-will and rebellion are but the reverse sides of that valuable quality in a child of a desire for independence, and since education does not aim at obedience as an end in itself but only as a means to self-government, care should be taken when attempting to conquer self-will not to crush the child's strength of character

Again, when punishing a child for eradicating any evil trait of character, we must not forget that we very often misjudge the child's behaviour For example, the child may be ignorant of lying, yet we might stigmatise a statement as a lie which is so only in appearance Very often we succeed in teaching a child how to lie by our over-anxiety to cure him of lying

Punishment has either a preventive or reformatory character. In early life, it is necessarily preventive or

deterrent, since the child cannot understand the reason of his receiving it, but as the child grows and rational consciousness dawns on him it is to be valued only as a means of moral self-education. It should develop his moral sense rather than stifling it.

A child's sensibility to punishment, according to Stern, passes through three stages of growth—the associative stage, the logical stage, and the moral stage. At the associative stage punishment is felt simply as a pain associated with certain kinds of actions, at the logical stage it is understood as a natural consequence arising out of a wrong deed; at the moral stage it is realised as an expiation for the wrong done by oneself. From this it is evident that punishment administered to children should never look arbitrary or vindictive. The culprit should feel the justice of it, particularly when he can reason about it. At least, the class or the group to which the child belongs should not think the punishment unjust. Punishment to be efficacious should be immediate, adequate, suited to the nature of the offence and sparingly awarded.

These days corporal punishment is meeting disfavour at the hands of all progressive educational thinkers. The old pedagogic doctrine was, "Spare the rod and spoil the child." It has yielded place to a new one, "Respect the individuality of the child and you will make him good." Now corporal punishment is deemed justifiable only when used to deter the child from the repetition of dangerous actions, e.g. climbing out of an open window. Grown up children can be punished in many other ways than the use of the birch. Depriving them of same advantage, detention in the class, rebukes etc. are some of the forms. Let the teacher, however, be very careful that his armoury is not exhausted too soon.

Punishment is, at best, a negative factor in correcting the child and has to yield place to such positive factors as suggestion, examples, training of the will, ms-

tructions and helps in forming judgments. Punishment is the main-stay of the power of weak teachers and weak rulers. Its constant use demoralises both him who uses it and him against whom it is used. The wise teacher will resort to other means before resorting to punishment. He will create such an environment about the child that the evil tendency in him will not be excited at all and thus it will die of disuse. He will keep him engaged in an interesting programme of work. Work cures us both of moral and intellectual defects. In finding out suitable work for each child lies the main problem of education, just as in finding out suitable employment for each citizen lies the main problem of government.

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CHAPTER VI

MODIFICATION OF INSTINCTS

(*Detailed Treatment*)

We have outlined in the previous chapter how instincts and innate tendencies are generally modified and how they can be utilised for the purpose of education. Now we shall take a few of the instincts and innate tendencies and shall deal with this process of modification in greater detail.

CURIOSITY — Let us begin with curiosity. This is one of the most important instincts from the point of view of education. The child's knowledge grows and his intelligence sharpens due to this instinct. It is the basis of his interest in new objects and situations. Anything strikingly new stimulates the curiosity of the child. It must, however, be within the range of his understanding; otherwise it is not likely to arouse his curiosity. The absolutely unfamiliar objects either evoke fear in the child or they are passed unnoticed by him. What attracts him is not the absolutely new or the absolutely old, but the new in the old. Hence the teacher has to arrange his lesson in such a way as to present the new aspects of it along with the old. Growing and moving objects interest the child, as there is always some new feature coming to view, hence his curiosity is always kept excited.

The curiosity of the child in the beginning is at the sensational level. He is attracted by brilliant colours, loud noises and sudden happenings. This is gradually to be raised to the intellectual level. Newton, who wanted to know why an apple falls to the ground, was as much actuated by curiosity as a child who wants to know the

cause of a sudden noise The child in his early life puts many questions to the elders, who usually get annoyed with his endless questioning They either give him evasive replies or hush him up with rebukes This is very undesirable on their part If the child's curiosity is stifled at an early stage, he becomes later incapable of taking interest in the world around him Efficient learning requires an inquisitive mind We have to promote rather than suppress the child's inquisitiveness through proper methods of teaching

ACQUISITIVE INSTINCT —At a very early stage in the child's growth the acquisitive instinct becomes active On the one hand this instinct is the basis of all selfishness, meanness and cheating, on the other, it is responsible for the conservation of the noblest and most useful product of civilization Hence the development of this instinct is to be very carefully watched and directed The child begins to collect all odds and ends Let him be directed to collect things that are educationally valuable, for instance, pictures, stamps and various kinds of specimen. Later, he should be encouraged in collecting things that are valuable not only to himself but to the groups in which he lives, or the class and school he reads in.

CONSTRUCTIVE INSTINCT —When a child sees an object, he tries to handle it and brings about change in it. This is the manifestation of the constructive instinct in him. The instinct first manifests itself in a tendency to manipulate objects This tendency should not be checked, for the child gets nervous control through manipulation of several things. At the same time his knowledge of the external world becomes solid and accurate

The constructive instinct impels the child to bring about new changes, it may be for the better or for the worse from the adult point of view The tendency to

break and destroy is thus not different from the tendency to construct. In what way the tendency will operate or manifest itself depends on how it is moulded by the educator. Children ought to be provided with lots of materials to construct models of ships, tents, houses etc. In this way they will not only get joy in their activity, but will also learn many things which are useful to them in later life. In the Montessori and Froebelian systems many useful lessons are learnt by the children through handling objects and combining them in several patterns.

SELF-DISPLAY —As soon as the child becomes conscious of his physical and mental abilities, the instinct of self-display manifests itself. He wants to attract to himself the notice of others. He is eager to win the praises of his fellows. It is this instinct which is the foundation of those traits of a man's character which prompt him to win laurels for himself and enhance the name of the community or country to which he belongs. On the other hand, if it runs amock, it manifests itself in bravado's spirit, in doing mischief to others and in bringing upon oneself the curse of society.

Children should be provided with proper opportunities for self-display. When they do any remarkable work they ought to be appreciated. Thus allotting of marks in class work is useful. It enables the more intelligent boy to distinguish himself from the rest. His instinct of self-display is gratified. This sometimes, however, leads other boys to becoming jealous of him. Then they try to pull him down, tease him or do him some mischief, if they do not get similar opportunities of self-display. The backward boys in studies become the mischief mongers of the class. Such boys ought to be provided opportunities of showing their worth in the extra-curricular activities of the school such as games, gymnastics, debates and scouting.

INSTINCT OF COMBAT OR PUGNACITY --The combative instinct is aroused when some strong impulse of the child is thwarted. It often manifests itself in undesirable ways. Hence educators usually seek to repress it. It is not, however, proper to do so on all occasions. It weakens the personality of the child. With proper education, it can be made a very valuable agent for social good. The child should fight for the weak against the strong. Again, whenever, a difficult situation arises, the instinct of combat is to be aroused to enable him to overcome it. Thus in solving a difficult problem in mathematics the energy of the instinct of combat is to be utilised by the teacher. The child with properly trained instinct of combat never feels down-cast in the presence of great difficulties. He tries to surmount them and would not be easily disheartened.

INSTINCT OF SUBMISSION --The instinct of submission is the reverse of the instinct of self-display or self-assertion. This instinct prompts an individual to submit himself to a superior person or authority. The instinct of self-assertion creates leaders in a community; that of submission docile followers. Within limits this instinct is very useful for the development of the personality of the child. It makes him orderly and obey others. The teacher has very often to evoke this instinct to maintain discipline in the class and to lead a child to do a given task.

There are certain qualifications that enable a teacher to evoke a feeling of subjection in the boys towards him. As Dumville points out, "A good physique, a strong deep voice, a determined look, a confident manner and bearing, an athletic prowess well known to boys, all these help".* Besides these self control and reserve also increase a teacher's

*Dumville. *Fundamentals of Psychology*, Page 262

impressiveness Familiarity breeds contempt "The children must not know their teacher too well or quickly"*. He should make a very sparing use of punishment. It should be kept in reserve, so that the children may fear receiving it. A good knowledge of the subject and a very careful preparation, since they enhance the prestige of the teacher, also help him in evoking negative self-feeling in the boys and in controlling the class.

SEX INSTINCT —One of the most difficult tasks before the educator is to watch the development of the instinct of sex and to give a proper direction to the flow of sex energy. The instinct being one of the most fundamental instincts of a living organism is very deeply rooted in our being. The psycho-analysts who have made a special study of this instinct, tell that it becomes operative when the child is a baby. It passes through various stages of growth—narcicism (self-love), love of the parents (œdipus complex), love of the same sex (homo-sexuality) and the love of the opposite sex (hetero-sexuality). According to Freud all experiences of love are characterised by a consciousness of sex. Love is a manifestation of sex instinct. The love of his own body, the love of parents, the love of friends of the same sex, and the love of some one of the opposite sex are the peculiar forms in which the sex instinct manifests itself at a particular stage of the child's growth. Each stage is necessary to the evolution of the child's personality. The first two stages of manifestation of sex are passed in infancy and pre-adolescent stage. They do not have the peculiar sex quality which makes them morally tabooed, hence there does not appear any difficult problem about them. The third stage comes when the child is about to enter the adolescent stage and hard upon it the fourth stage follows, and it is at these stages that the educator has to take care of the

* Dumville. *Fundamentals Psychology*, page 262.

child most and herein lie many difficult problems for him to solve. The guardians of the adolescent fondly believe that the child is ignorant of the sex matters and feel safe in not exciting his curiosity about them by making any reference to them. But the truth of the matter is that most children by the age of fourteen begin to have experience of sex and know about sex relations. When the child is not properly guarded, he contracts many perverse habits. The sex impulse tries to gratify itself in any way open to it. After a while, however, this tendency finds itself opposed by the moral self of the child, which also grows in the meantime. A dual ensues, as a result of which much of the nervous energy of the child is exhausted. He sometimes develops many phobias and complexes which endure throughout his life and weaken his personality.

Some parents try to keep the child segregated from his young comrades so that no evil influence may fall on him, and his mind may remain free of sex thoughts. But this remedy hardly serves the purpose. The child secretly somehow learns every thing and then regards his segregation as tyranny of the parents. When the opportunity comes he recklessly indulges in those things which were regarded as evil by his parents. The effect of segregation is not salutary even where the parents are successful in keeping the child away from sex thoughts. For there are several elements or aspects of the child's personality which remain undeveloped due to his being kept aloof from the company of his comrades. No one can teach a child better than a child of his own age can do. His intelligence sharpens, his social-self develops and his moral consciousness awakens through his contact with his fellows. If we try to keep the child free from all evils of society, we usually succeed in keeping him away from the good that it confers on him as well. Hence what the parents and the guardians of the child have to do is to allow him a

measure of freedom to mix with his fellows and to keep an eye on him.

The child is to be informed according to his age on the nature of the sex relation. The teacher has, however, to refrain from much that goes by the name of *sex-enlightenment* or *sex-education*. If the proverb, "Where ignorance is bliss, it is folly to be wise" is true anywhere, it is in matters of sex. Teachers, who encourage reading of erotic literature on the plea that they are thus giving sex-education to children, are really weakening their character. The sex instinct works in very subtle and curious ways and much of the literature on sex owes its popularity to the fact that in a very unoffensive way it gratifies sex desires. The more one indulges in reading such literature, the keener grows the appetite for it. Thus by a vicious circle one finds oneself all the more entangled in the evils one wants to get rid of. Talk on sex likewise makes children all the more curious about things which it is better for them to remain ignorant of. Hence let all such talk be restrained and let it all come only where it is urgently needed. Adolescent boys and girls are at times seen reading literature that purports to explain sex phenomena, its nature and abuses. Reading of such literature is to be discouraged. Such literature, for the reason explained above, does them more harm than good. The exact nature of the injury that occurs from sex abuse has to be told to the child, so as to check him from going astray on the one hand and to prevent the development of the phobias on the other. But above all he should be provided with ample work. If a child is kept always engaged in an occupation in which he takes interest, no hyperbolic development of the sex impulse will take place. There are several activities, such as scouting, stage shows, painting pictures, and several forms of artistic creations that sublimate this instinct. Such activities should form the normal part of the school work.

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CHAPTER VII

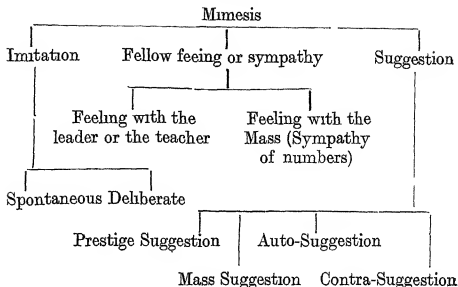
MIMESIS

Education aims at modifying the inherited modes of behaviour of the child. In the previous two chapters we were engaged with reflexes and instincts. In the present chapter and the succeeding one we shall deal with innate tendencies. These may be classified in two heads—Mimesis and Play.

Mimesis, according to T. P. Nunn, is the general tendency of an individual "to take over from others their modes of action, feeling and thought."* Mimesis in action and feeling is to be found in animal kingdom, but mimesis in thought is possible only to man, for man alone thinks. The young animal does, as it finds its elders doing. A young chick begins to peck at some white round object seeing its mother doing so. The chick has inherited the tendency to search for its food, it may be hungry, but in the absence of the tendency to imitate its mother it will not pick up object that will appease its hunger. Young ones of some birds have been known to perish of hunger in the absence of natural stimulus to pecking. As we rise higher in the scale of evolution mimesis plays an increasingly important part in the process of acquiring new adaptations by an individual. Mimesis in man becomes conscious. When this takes place it is known as imitation, sympathy or suggestion. Doing as others do is imitation, feeling as others feel is sympathy, and thinking as others think is suggestion.

CLASSIFICATION :—The table given below will generally help the reader to grasp the various kinds of mimesis in their mutual relationship to each other.

*T. P. Nunn. *Education, Its Data and First Principles*, P. 138



In the following pages of this chapter we shall take up in detail each of the above form of mimesis and shall see how they can be utilised for the purpose of the education of the child.

IMITATION

Imitation is one of the most important general tendency from the point of view of education. It is usually defined as a form of suggestion where in the suggesting stimulus gives rise to an activity of a like nature. The old and the young imitate. So far as the child is concerned, most of his time is spent in imitating others. His attempts at speaking, walking, playing, reading and writing are all imitations of what the elders do. The tendency to imitate others is deeply grounded in the nature of all species. The young ones of animals and birds, just like those of human beings, learn to feed themselves, to run away for safety and do several other acts that preserve life through imitation.

VALUE OF IMITATION IN LIFE :—The tendency to imitate others is usually depreciated by us. We look down on such work as is mere imitation. But without imitation neither would the organism be able to protect itself from harmful conditions, nor would it grow. For individual as well as for social progress imitation is very necessary. "Imitation and invention are the two legs," says William James, "on which humanity has proverbially walked." It is through imitation that we benefit ourselves from the experience of others. Imitation makes possible both the conservation of the ancient culture of the people as well as the propagation of new ideas. The habits and customs of society embody the experience of the races and through following the same we take advantage of the experience of the past. Similarly, if an original mind were to suggest some reform in the modes of our living, it is only through imitation that the reform can spread in society. It is obvious from this that the tendency to imitate is quite as laudable even as other natural tendencies are. We progress in life through imitating those who are our superiors. There is no real opposition between imitation and originality. The greater the scope for imitation, the better will the individuality of a person be developed. "Imitation, at first biological, then reflective, is, in fact," says Nunn, "but the first stage in the creation of individuality". A nation whose culture is backward can raise itself only through the imitation of those that are forward. The example of Japan is before us. Napoleon used to say to his generals, "Do not fight against the same army for long, otherwise you will teach them all your tactics of war."

The child's experience is limited. The evolution of its life and the growth of its intellect depends on imitating the elders. It is for this reason that the tendency to imitate others is stronger in children than in adults. Were the tendency not so strong the mother or the nurse would

not have been able to teach it to utter words, to walk, to read and write. The tendency is spontaneous. When the child is two or three years old, imitating others becomes its play. When a group of children see soldiers going on the road, they are impressed by the sight and they begin to act as soldiers. Similarly, the child plays horse-riding, imagining his stick to be a horse, just in imitation of the activities of the rider of a horse seen on the way. The child in the like manner drives the motor car, rows a boat, acts as a policeman or a magistrate in response to the stimulus supplied from outside. All these activities prepare him for the battle of life.

SPONTANEOUS AND DELIBERATE IMITATIONS —Imitation is either spontaneous or deliberate. In the child's life spontaneous imitation occupies a much more important place than the deliberate imitation. Spontaneous imitation is an impulsive act in which the suggesting stimulus has an immediate effect. In deliberate activities, on the other hand, there is a mediation of thought. In adult life there is more of deliberate imitation than spontaneous. As the child grows spontaneous imitation yields place to deliberate imitation. The child as it grows thinks about the propriety or otherwise of an act which it sees others doing and after this rudimentary valuation either it desists from the activity or follows it.

But in the early stages the child has not such a power of making judgments. Its ideas are not developed to make this possible, hence at this stage we should appeal more to his spontaneous imitation. It is no use lecturing to him about the value of any form of activity. What one has to do is simply to provide occasions to the child to see how the act is actually being done. Thus children can be taught many things unconsciously through play. Similarly, the teacher should utilise the tendency of a child to imitate other children. Madam Montessori has

utilised beautifully this spontaneous imitation of child in her educational system. The school is no longer a 'slaughter house of the young' but it is a place for play. Children are not deliberately taught anything but they are allowed to learn most things through imitating other children in the school

The tendency of spontaneous imitation may be utilised for forming good habits. Children can easily learn to keep their bodies clean, to dress themselves properly, to be punctual and to help others, through spontaneous imitation of others. Many bad habits are contracted by the children through imitation. Usually children learn to smoke and drink simply because they find their elders doing so. If there is good environment about the child, he will naturally, through spontaneous imitation of others, form good habits, if the environment is bad, he will form bad habits. It is the environment in which the child grows which determines whether he would have a good character or a bad one, whether he would contract virtues or vices.

The ability to imitate others deliberately comes of a slow growth. It pre-supposes a certain amount of ideational development and the ability to concentrate attention on a particular activity for an appreciable time. The child learns reading, writing and solving sums through deliberate imitation. The teacher should be very particular about the model which is supplied to the child, thus for instance his black-board writing should be very neat, legible and uniform, for it is his writing that children take both consciously and unconsciously as standard and by constant imitation form like habits of writing in their note books. The teacher should from time to time read out model essays, show model works of art to children so that they might have before themselves a standard. Sometimes, he should exhibit to the class the work of a

superior child of the same class. This will encourage the latter child and arouse a spirit of rivalry in others to excel him. It is advisable also for the same reason to announce to the class marks obtained by pupils in terminal examinations. This will awaken the spirit of emulation in all the students.

PROJECTIVE AND EJECTIVE IMITATION — Imitation according to Stout, is either projective or ejective. Projective imitation is characterised by an attitude of submission to the ideal whereas in ejective imitation he has an attitude of rivalry. "In the *projective* stage, imitation is as yet relatively unsuccessful, the mode of activity imitated and the experiences connected with its exercise are as yet more or less beyond the reach of the imitator, they have not yet become part of his existence. On the other hand, when and so far as his imitative efforts have succeeded, this contrast ceases. His conception of himself coincides with his conception of the other person. In thinking of the other person he simply ascribes his own experience to the other person—he ejects or throws them out into the other person instead of projecting, or regarding them as something beyond what he has himself actually attained." In projective imitation the imitator is "receptive, submissive, and respectful" where as in ejective imitation he is "aggressive, self-complacent, and disdainful or patronising."

There is much of projective imitation in the life of the child, but as it grows ejective imitation becomes more important. The attitude of awe and reverence towards the elders yields place to an attitude of feeling oneself as their equals. In course of time the growing individual makes his own standard of conduct and begins to criticise his own activities and those of others from that standard. Familiarity with any form of activities changes the attitude of projective imitation to the ejective one, and a certain

stage comes when imitation becomes unnecessary. When the child has become an adolescent, the teacher should appeal more to his self-regarding sentiment or the idea which the child has of himself, rather than depend on his impulse of slavish imitation of the activity of elders. The elders need not be shocked if the adolescent becomes critical of their activities and at times thinks of himself and his abilities as superior to them and their abilities. This necessarily comes, if the process of growth has been natural and unimpeded. The elders would lose all respect and would even be regarded as enemies by the children if they still want to lord their superiority over them.

EMULATION

Emulation, to which we have referred above, is a form of imitation whereby the child not only tries to come up to but excel the standard placed before him. When imitation is combined with the instincts of pugnacity and self-display, there is emulation. It is a healthy tendency of the mind. We usually run it down but without it there would be no progress in a child's life. "Nine-tenth of the work of the world," says William James, "is done by it." It is this which is responsible for the performance of those marvellous deeds which have become the eternal records of History. Efficient work is not possible in the absence of this tendency. The child is always comparing himself with other children and is ever trying to excel others. He imitates those who are his superiors but his attitude towards those who are his equal is of emulation. It is due to the spirit of emulation that he makes up the deficiencies which he finds in himself. It is this which makes him ever watchful of his own conduct.

HOW TO UTILISE EMULATION —The teacher has to introduce some sort of competitive spirit in class work. This can be done by awarding marks for the work done.

Weekly and monthly tests serve the same purpose. The rank of each boy in each test ought to be shown. The spirit of emulation is also awakened by awarding prizes for good work done. The prizes have to be given before all boys at special functions. The prizes need not have much intrinsic worth. They ought not to be coveted for their money value. They are to be simply marks of distinctions. In some schools and colleges there are "Honour Boards" where names of specially brilliant boys appear. This also promotes the spirit of emulation among boys.

The teacher, however, has to be cautious about competition becoming bitter. Competition is good within limits, but when it enters into every work or the whole fabric of thought of an individual it engenders envy, hatred and malice. Let the impulse to rivalry not degenerate into immoral feelings of doing harm to others or shining out at the cost of others. This takes place when rivalry is too often evoked. Awarding of marks is good, but when for every work marks are given, the student begins to work merely for gaining marks. The means becomes an end. Again, it very often happens that those who gain low marks become damped in spirit and if they have to feel their inferiority too often they lose interest in all work. The teacher has to avoid the two extremes. On the one hand he has to see that the class work does not become a dull monotony for the best boys and on the other, unhealthy feelings do not become keen among the members of the class. He has to promote emulation and yet see that it does not exceed its limits and become something else.

GROUP EMULATION AND SELF-EMULATION — This effect is achieved by encouraging group activities and promoting rivalry among different groups or sections of the same class. The individual will then work not

for himself but for the whole class. Such a boy would grow into a highly socialised personality. Another way of avoiding the unhealthy spirit of competition among boys is to make each boy emulate himself. The child should keep a record of his own progress, maintain diaries and he should be trained to see how he is getting on with his work. Teacher's monthly report serves the same purpose. In Dalton Plan there is a card kept by each boy. This shows his progress during the month in each subject of study. In this system the boy looks more to himself than to others to get impetus for hard work. This, however, promotes too much individualism among boys and often is not a sufficient motive for diligence. Yet this has its value and may be utilised as a method through which we might control unhealthy rivalry among boys.

SYMPATHY

Sympathy is an innate tendency present among all animals that live in herds. Sympathy and the gregarious instinct make group life possible. Due to gregariousness animals and men come together and due to sympathy group life is consolidated and social evolution takes place. It is the basis of all higher developments of society.

KINDS OF SYMPATHY —We may distinguish primitive sympathy from that of a developed type which we find among men. The former is a kind of unconscious feeling. It consists in the liability or capacity to be stirred to that kind of instinctive behaviour whose signs are displayed by other members of the species. It does not require the presence of imagery or ideation. Thus when a dog's bark of anger is heard by other dogs their instinct of combat is aroused and they come to the scene ready to fight. Similarly when a bird cries out of fear and flies away, other birds take to wings. They do this not because

they perceive the object of fear but because they are caught by the emotion of a fellow bird. "All that is necessary" says Dumville, "to account for it is that the psychophysical disposition which we call instinct is capable of being excited not only by certain unfamiliar objects but also by the perception of manifestation of the instinctive emotion in other members of the same species "

SYMPATHY IN EDUCATION.—Sympathy works among boys in the same way as it does among animals. It is, of course, not of the primitive type. There is presence of imagery. The teacher has to make use of it in controlling the class. If he has the majority of the class with him, he can easily subdue the refractory members. He has to make use of, what is known as, "Sympathy of numbers" in maintaining discipline and improving the "tone" of the class. The teacher has to be very careful in his every day routine of work, so that he may always keep the majority with him. If in the class there are refractory boys they are usually corrected unconsciously by seeing the behaviour of the majority towards the teacher. Nevertheless the teacher has to concentrate his attention upon all such boys. They are usually unrecognised leaders of the class and if their attitude is not corrected it soon spreads to the whole class.

The teacher's position in the class is attended with many dangers. On the one hand he has to be strict and maintain a dignified reserve, on the other he should command the sympathy not only of the best boys in the class but of the rank and the file. He should be a good disciplinarian, yet he should not forget that severity of punishment alienates all sympathy of the boys. Whenever punishment has to be administered to any boy the class should feel the justice of it, or soon a position will arise when the threats and punishments of the teacher will lose all value. The teacher has to be strict but he has

to be in sympathy with the children also. He has to be firm as well as to be kind. "A cold masterful attitude may evoke little response but opposition, especially if the teacher has little real impressiveness. But a masterful attitude combined with kindness will scarcely fail to produce the right effect"* Students are seldom enamoured of teachers who cater to their whims, who truckle to the lower tendencies of the boys. If the boys feel that the teacher is their real benefactor and punishes them for their good, he would seldom lose their sympathy.

The teacher, however, should soon spot out the *leaders* of the boys. Such leaders usually do not know their own importance in shaping public opinion. The teacher should make them his friends and through them govern the class. They should not be declared as leaders before they have acknowledged the superiority of the teacher. They ought to be made to feel that it is the teacher who has raised them to the high status in social life. Then only will they remain indebted to him and be friends of the constitution. Thus the very rebels become the ministers in a wisely governed class. The "dangerous" persons are taken into confidence and made to help the teacher in maintaining law and order. The carrying on of government in a school is not different from the carrying on of government in a state.

The teacher has to direct the expression of sympathy of the boys in such a way as to conduce to healthy social life and bring about happy social cohesion. The class should feel as one and each individual should share the happiness and sorrows of his fellows. This sympathy as guided by well-informed intelligence is bound to result in making them highly developed and socialised personalities.

*Dumville · *Fundamentals of Psychology* p 263.

SUGGESTION

NATURE OF SUGGESTION — "Suggestion" says Stern, "is the awakening of a like mental attitude by means of inner imitation"* It is, according to T P Nunn, the adoption of another person's ideas unwillingly by oneself. The child adopts another person's ideas thinking them to be his own. The phenomenon of suggestion is most conspicuous in the state of hypnosis. But even in our ordinary every day life it is by no means absent. We move in a world of thoughts. Thoughts of others are imperceptibly and unconsciously determining our ideas, feeling and will.

Suggestion presupposes ideal development. It is possible only when the child has attained some degree of ability to reason, judge and think. Thus as compared with pure physical imitation, it stands at a much higher level, all that is required for imitation is that the child should see others' movements and be able to carry them out. But suggestion requires the child to penetrate into another's outward signs of words and expressional movements and reach the inner judgment and feeling lying behind them. The child screams or claps his hands when he sees others doing so. This is pure physical imitation. On the other hand, feeling sad or weeping when it sees other persons shedding tears requires the ability to know the feelings behind the external manifestation of an emotion.

CONDITIONS OF SUGGESTIBILITY.—Suggestibility depends on age, intellectual growth and temperament. Suggestibility cannot exist in the baby. In childhood and pre-adolescence suggestibility is very prominent. As adolescence comes, the thoughts and the conations of the child get organised. He develops a centrality of will.

*Stern *Psychology of Early Childhood* p. 455.

His actions are self-willed and spontaneous. Hence in normal conditions of growth the suggestibility diminishes.

Suggestibility also depends on temperament. Some individuals are more suggestible than others. Those who have not had to exercise critical judgment remain credulous for long. Then, those of the extrovert nature are more suggestible than the introverts.

The suggestibility of a person depends upon his mental constitution and his health. Persons in whom self-assertion is very strong do not easily admit in their minds thoughts of other men, on the other hand, those in whom the instinct of submission is strong accept easily whatever is communicated to them. Every one is liable to accept suggestion in an unhealthy state of mind much more easily than otherwise he would do. The suggestibility of a person to a proposition also depends upon the source from which suggestion comes. Every one is liable to accept a view unchallenged if the source from which it originates enjoys a high reputation or is impressive. Similarly the strength of numbers who accept a belief as true also counts in determining our attitude towards it.

SOURCE OF SUGGESTION — Suggestion comes from all persons who live about the child. But the strongest suggestion comes from the mother, the play-fellows, the father and the relatives. This is due to the child's regard and affection for them. Mothers exercise the strongest suggestive influence. Their beliefs become the child's dogmas, and what the mother earnestly desires, she is able to impress upon the child. The play-fellows also influence him much. In early life brothers and sisters have the most vital influence on his mind.

KINDS OF SUGGESTIONS.—Suggestion may be either intentional or unintentional. The gossips of ghosts and

demons communicate fear to the child's mind though it is not intended by the speaker. Our actions and utterances unconsciously determine the thinking of the children about us. An ounce of practice is worth a ton of precept. This maxim embodies the course of unconscious suggestion that one individual communicates to another. In order that suggestion may have a healthy effect, the thoughts and the actions of the *transferer* should be noble and there should be a harmony and community of feelings between himself and the *imitator*. Suggestion is sometimes classified as prestige suggestion, mass suggestion, auto-suggestion and contra-suggestion.

Prestige Suggestion —We easily harbour or accept the thought of those who are superior to us in experience, scholarship, age, social status and power. The elders for this reason are in an advantageous position over the children. Teachers like-wise influence the conduct of their pupils through prestige suggestion. They have to be on guard against the misuse of this power. Certain mental and moral qualities—scholarship, assiduity, firmness, fairmindedness bring to them influence over their pupils, which they can always utilise in maintaining class discipline and controlling attention. So long as the teacher commands the confidence of the child no serious breach of discipline is likely to occur.

Mass Suggestion :—Mass Suggestion is a great force in the school. Where people gather in large numbers this force begins to act. Our thoughts and feelings are always influenced by the sight of numbers moved by certain thoughts and feelings. When the same thing is told by everyone with whom we come in contact, we cannot resist this cumulative suggestivity. Mass suggestion is the basis of "sympathy of numbers." We have to utilise this force for the good of the school. It is this which determines the tone of the school. School tone, more than

anything else, is a determining factor in shaping the character and conduct of each individual child.

The phenomenon of mass suggestion is much like the phenomenon of sympathetic induction of emotion. Any belief that is current among a whole group of men, is easily shared in by any member belonging to the group. In this way ideas of right and wrong, of heaven and hell and several kinds of superstitions continue on to exist in society and no individual dares to oppose them. Similarly in a class a child works very much under the suggestion of his fellow students. He shares in their beliefs and ideals of conduct. If the general atmosphere of the class is good, no child can escape its influence. The teacher should try to improve it and keep the tone of the class high in order to maintain discipline and make teaching effective.

Auto-Suggestion —When the giver and the receiver of the suggestion are in the same person we get the phenomenon of auto-suggestion. The individual transfers an attitude of his own from one period of time or one psychic activity to another. Thus fearing attitude may persist because it was once caught by the child*. Imaginary external objects are pictured due to auto-suggestion. Nervous people often suggest to themselves thoughts of devils, misfortunes and illness. They ever live in a state of unreasonable fear. Persons of health and sanguine attitude are visited by thoughts of hope and courage.

*Stern, in this connection makes the following observation about one of his children —Hilde (4 11½), Gunther (2, 8½). The two children often play together at "The Lion or the Dog is coming," or some such game. One of them then creeps on all fours across the room and the other runs away in apparent fear. The lion or the dog does not make a terrifying noise or even show his teeth or claws—they are the lamest animals but, none the less, the child pursued often begins to cry in such terror and so hastily takes refuge with his mother that we feel quite convinced that the fear is real and not simulated, in this case auto-suggestion adds a spice of actual terror. —*Psychology of Early Childhood*, p. 461

The Self-help Psychology Association of America is making a special study of the phenomena of auto-suggestion. Due to auto-suggestion miracles have been done by individuals. Life becomes a series of victories won to one who perpetually suggests to himself healthy thoughts. It is auto-suggestion which made Clive 'the Founder of the British Empire' and it is this force which made Napoleon practically invincible. In one of his campaigns in a hotly contested battle, the artillery was not working properly. A thick shower of bullets was falling there. This caught the vigilant eye of Napoleon, he went to the spot where the guns were placed and began personally to direct the operations. One of the gunners then requested him to go away from the place and not to risk his life. In his characteristic way Napoleon answered: "There is not that bullet yet cast which shall kill Napoleon." It was his auto-suggestion that led him on to victory after victory.

There is a great truth in the saying —

Cowards die many times before their death
The valiant taste of death but once

Many a battle have been lost due to mere unhealthy auto-suggestion. Fear, it is said, is the most expensive host to entertain, and most fears of men have no foundation. Often they are excited through the habit of living in unhealthy auto-suggestion. Men are known to have died of diseases from which actually they never suffered*. Thus

*In the chapter on Dreams (in Introduction to Psychology), writing on *premonitions that come true* Seashore says: "Then there is the very interesting class of dreams which cause their own fulfilment. There are cases on record in which a person has dreamed that he should die at a certain time and has died at that very time, probably from the influence of expectation. If one can die simply because he has dreamed that he should die what cannot one do in the way of fulfilment of dreams under the influence of expectation? Dreams suggest to us that we shall do certain things and in obedience to this inner voice, we go and do them."

all kinds of phobias are due to auto-suggestions. We have to see that children do not harbour them.

Contra-Suggestion —This phenomenon is noted when the imitator does just the opposite of what the transferer wishes. This is often due to the lack of community feeling between the two. The opposition vanishes as soon as the suggestor's attitude is changed. The obstinate child can be made to do the very same thing which one likes him to do by giving him a suggestion just contrary to the one given to a normal child. When the pig could not be taken by a farmer to the slaughter house by pulling him the right way, he was thrust into it by pulling him the opposite way. With many a child we can deal in the same way.

If the atmosphere of the class is not favourable and the teacher has a *poor personality*, the impulse of contra-suggestion is evoked when he tries to force his conviction upon the boys. Contra-suggestion is sometimes evoked due to an *inward discontent with the behaviour or the attitude of the teacher* towards the boys. The teacher has to forestall it, for if once it is evoked, by the sympathetic induction of emotions it spreads soon to the whole class. The class gets out of control and no useful work is possible in such a state. The teacher's character, learning and sincerity in work must be above question. In a school, teachers should not talk ill of each other, for such things soon spread among the boys and the work of their school is bound to suffer due to loss of prestige on their part.

NEGATIVE SUGGESTION —The teacher should, so far as possible, avoid giving negative suggestions. The child

Thus very often premonitions weaken the will of the individual and gravitate him to the doom he wants to avoid. The teacher who can make the child believe that he has a bright future before him does him immense good. No suggestion sent by others can do any harm to any one unless it becomes an auto-suggestion.

is thereby impelled to do the very thing he is forbidden to do. Pandora opened the box which contained all the calamities simply because she was definitely told not to open it, Adam and Eve tasted the forbidden fruit simply because it was forbidden. Orpheus could not control the impulse to look behind and see if his beloved Euredice was following. The impulse was mischievously excited by Pluto through negative suggestion while returning to him his wife. Thus negative precepts—don't steal, don't tell a lie—are not only useless for the child, but they do to him positive harm. In this way we are suggesting to the child forms of vicious conduct of which, as Raymont* points out, he would otherwise remain blissfully ignorant

The negative auto-suggestion against our will makes us do the very thing we want to avoid doing. While learning cycling, the learner seeing a post in front of him wants to avoid dashing against it. But this very thought unconsciously turns the handle towards the post, and lo! he dashes against the post. Thus our fears come true by becoming a sort of fixation. Let us take an illustration from Stout. "A youth about to make his first speech foresees that he will tremble, turn pale and perhaps become incoherent. What he wishes is to behave in quite a different manner, and yet at the critical moment, the idea of how he fears to behave so occupies his mind that he inevitably behaves in the way he expected"†

DANGERS OF SUGGESTION :—The most striking effects of suggestion are in an undesirable direction. Any fear communicated to children in early life seldom gets out. Once fear of ghosts, hobgoblins and devils finds a place in the mind of the child, it dwells there in all his later life. It is the duty of parents and teachers to save

*Raymont, *Principles of Education* p. 122.

†*A Manual of Psychology* p. 128.

their children from all such unhealthy influences. Nurses and mothers often speak of ghosts, blackman, policeman in order to hush up the child from crying, and these become objects of terror to the soul of the child. No outer influence, can embitter a child's early years as threats like these. They are worse than severe punishments for they cause permanent injury to the soul of the child. Therefore, it is the parents' most urgent duty to refrain completely from fear suggestions and strictly forbid their servants to use them.

EDUCATIONAL VALUE OF SUGGESTION :—A teacher has to make use of all kinds of suggestions in teaching the class and maintaining discipline. Physically the teacher is much bigger than the boys and the depth of his learning is also beyond their capacity to gauge. Hence he has a natural advantage over the boys to impress them. Their submissive instinct is evoked in his presence, and unless he be given to whims or sudden outbursts of anger he would command the obedience of the class. The teacher should show consistency of policy, should look calm and self-possessed before the class and be thoroughly prepared with the lesson. This will enable him to secure the attention of the class and make the boys work in the way he likes.

Suggestions can be utilised for the good of the child. The child's thinking power is limited and it is to his own advantage that he naturally allows himself to be guided by the thoughts of others. We can utilise this power in suppressing the harmful tendencies—if there be any—of the child. It is of immense value in moral training. The moral influence of the elders catches the child, and his life is reformed in an unconscious way. Good habits of conduct and valuable interests can be fixed through suggestion. It can be used in maintaining discipline in the school.

ITS LIMITATION :—There are, however, limitations to the value of everything. As the child grows, suggestion yields place to spontaneity. Let the parents and teachers not stand in the way of its emergence. Too much of suggestibility in any child retards the growth of character. It signifies dependence, want of critical faculty, credulity—in a word, lack of personality. The actions, feelings, and thoughts of the child will be self-determined as he advances in years. He will create his own judgments and values and will be guided by them. Determination by others is the negation of character; the essence of a sound personality is character which is but another name for ability to determine oneself.

There are some abuses of suggestions which a teacher has to avoid. He should not put questions to the class suggesting either wrong answers or right answers*. No good purpose is served by confounding boys with suggestions of wrong answers. Similarly leading questions, elliptical questions and those bringing answers in 'yes' or 'no' should not be put. The ultimate aim of teaching is to stimulate thinking in boys and where this end is not achieved teaching cannot be called a success.

References —

1. Dumville : *The Fundamentals of Psychology* Chap. XII.
2. Stern—*Psychology of Easy Childhood*, Chap. XXXII.
3. Lord Lytton—*New Treasure*

*Children are easily deceived by suggestive questions. Here is an interesting anecdote from Dumville (*How to Teach*). An Inspector showed to a class the picture of a ship going in a particular direction. The boys were asked to observe the picture. When the picture was removed the following question was put to the class—Was the boat going in the same direction as the ship or in the opposite direction? Most of the boys responded that it was going in the one direction or the other. Only two boys remained silent and looked confounded.

CHAPTER VIII.

PLAY

NATURE OF PLAY — Play is an expression of the creative activities of the child. It is marked by spontaneity, freedom and joy. Play according to McDougall is an innate tendency like suggestion or imitation, and just as the latter is important to the preservation, growth and development of the organism, so too is the former necessary for the growth and perfection of the physical and mental powers of the child. The young ones of animals and birds play, so does the human child play. If a kitten gets a ball before it, it begins to roll it hither and thither, takes it in its mouth and leaves it or jumps over it suddenly. It seems, in these activities, it is doing with the ball just what it would do with a rat.

Play is defined by Stern as 'voluntary self-constrained activity'. There is no exterior constraint present, no ulterior object to be attained. The end of the activity lies in itself. It is a free activity. This, however, should not mean that play as such has no purpose. All biological activities of an organism are teleological and play too accomplishes a great work in the perfecting of an organism. On the one hand, it is true to say that the child is free in his play activities, on the other, it is equally true that the child cannot but play. There is an inward urge placed in him by Nature to play. Just as a poet cannot restrain himself from writing a poem, or a musician from singing, so too the child cannot restrain himself from playing. There is no constraint from outside but there is constraint from within. This constraint, of course, as it comes from his own nature is compatible with his freedom or spontaneity. Let us see why nature makes the child play.

THEORIES OF PLAY

SURPLUS ENERGY THEORY—The play activities are characterised peculiarly by spontaneity and an expression of abundance of energy. This perhaps led Spencer and others to state the view that play is an *expression of superfluous energy*. It is letting off the steam which is accumulated in the boiler and which is not being put to use. But this analogy seems to be erroneous. The steam that is let off goes away useless. It, in no way, helps the boiler to perfect itself, but the play activities of the child perfect his body and mind. His limbs become strong, it acquires nervous control and balance of body through play activities even where the play activities do not seem to be directed to the realisation of any particular end. The child becomes familiar with the world through play. He also makes many ventures in play activities which otherwise it would not make.

Again, we find children playing not only when there is too much accumulation of energy in them but also when they seem to be dead tired with school-work. Thus play instead of letting off "superfluous energy" seems to recreate. Recreative plays would be unaccountable if we accept 'exhaustion of an accumulated store of energy' as the only principle for explaining play-activities.

RECREATION THEORY :—According to this theory play re-creates energy. Play is necessary in order to provide refreshment after arduous labour. The ordinary activities of life are extremely fatiguing and an uninterrupted pursuit of them would be injurious to life. The theory was stated by Lord Kames, an English nobleman, and its latest supporter is G. T. W. Patrick.

This theory represents the view point of adults. Play is a means of forgetting the rigours of life. But it is

not proper to look upon children's play as escapes from the drudgery and the tedium of ordinary work. This theory is as much one-sided as the superfluous energy theory. Each seems to be a view of a special class. The recreation theory gives the view point of those persons who are occupied in a monotonous routine of pressing work all the day long and look up play as re-cuperation of energy after the day's work.

ANTICIPATORY THEORY.—The theory of Karl Groos seems better suited to explain the play-activities of children. "Nature invented play not merely as a means of disposing harmlessly of the young animal's superfluous energy, but as a device for using that energy to prepare him for serious business of life"* Karl Groos observes that the young one of an animal in play does those things that would be the serious business of its later life. "Play", says Stern, "is indeed to life as manœuvres to warfare" Thus in the example given above of the kitten playing with the ball, it is actually preparing itself to hunt a mouse. Similarly, a puppy chases another puppy in its play, in later life it will be required to chase similarly its prey. Karl Groos puts this truth epigrammatically in the statement, "It is not so true that animals play while they are young as that they are young so long as it is necessary for them to play" The longer the period the young ones of any species play, the greater the perfection they attain. Conversely, the lower the species in the scale of evolution the shorter the period of play allotted by Nature to it. Play time is really a time of learning, of preparation. Man has to learn much, hence the period of play is also very long.

RECAPITULATORY THEORY.—The theory of Karl Groos explains most of the play activities of children,

*T. P. Nunn—*Education : Its Data and First Principles*, p. 81.

but it does not explain the characteristic forms of some of the play activities of the adults as well as of the young. Stanley Hall advances his own theory to explain such activities. He regards the anticipatory theory of play of Karl Groos as very partial, superficial and perverse, considered biologically. Stanley Hall thinks that every individual recapitulates the history of the whole race as it has evolved from brute level to manhood and from barbarism to civilised life. The plays of children according to Hall are recapitulations of the early stages of the growth of human beings, they are reminiscent of what the ancestors were once engaged in seriously doing. This recapitulation is necessary for the growth of the child. The play activities are in a way cathartic in their operation. They purge the individual of undesirable traits. As T. P. Nunn puts it, "Men cannot shed altogether the ancient tendencies to cruelty and vice, but play is at once a means by which the mischief may be taken out of them and a means by which they may be transformed into impulses of ethical value."

RECONCILIATION OF THE OPPOSING VIEWS —The two views according to Nunn are complementary and not opposed to each other. "Thus it may be true," says T. P. Nunn, that spontaneous play often derives its typical features from the adult life of distant ages, and also true that those racial memories still re-awaken in each generation because they have a direct value for the adult life of the present epoch. Or putting the same point in another way, we may hold that the atavistic factors are then memic basis from which the child's forward-directed hormone proceeds, while the cathartic action of play is the sublimation of energies associated with them. Hall's view is most hopeful in the case of play which like dancing and outdoor games is fundamentally a motor phenomenon. On the other hand, where play engages the intellect rather than the body, Groos's interpretation is the more instructive

and the more fruitful from the point of view of the educator ”*

MARKS OF PLAY AS A MODE OF EXPERIENCE

Play is usually thought of as *an activity pursued for its own sake*, there being no regard for the standard of the achievement. But the play activities, though they are free, are yet *not without a standard*. There is a standard for play as well as for work. The real characteristic difference between the two is not the absence of a standard of achievement in the one case and its presence in another, but rather the *presence of spontaneity* in play. It is the presence of constraint that makes any activity “work” and its absence that makes it “play.” The highest form of work which is not done under constraint but freely and spontaneously is in essence play. Philosophers have pointed it out that there can be no ultimate antithesis maintained between work and play. Lord Krishna’s work which in no way lacks seriousness is characterised by the ancient Rishis as *Lila* or play †. All artistic creations partake of the nature of play. The soul of all art is the joyous exercise of spontaneity.

*T. P. Nunn. *Education, Its Data and First Principles* pp. 83, 84.

†The following extract from the writer’s article *Divine Work and Play* in Kalyan Kalptaru (June 1938) is being placed before the reader for reflection.

God’s work is play, it is unmotivated, spontaneous, joyous activity; so too must be the work of him who has merged his being into God’s being—who has realised his oneness with Him. Again, human work comes near God’s work to the extent it is characterised by spontaneity and joy, that is, to the extent it has the quality of play.

When it is said that all divine work is play, it is not implied, that it is a free exercise of one’s own whims. For there is a negation of freedom in submitting to one’s passing impulses. Freedom means self-determination or subordination of one’s lower nature to the higher nature in us, or acting in accordance with the divine dictates, the *categorical imperative*, as given by the Antaryami (the In-dwelling Divinity) in us.

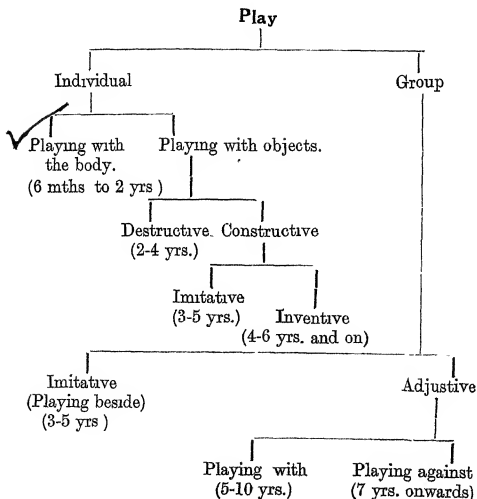
The play activities, are a free expression of the individuality of the child. They are consequently *accompanied by joy*. We all like play for the joy it yields. It is one of its main distinguishing features.

Another characteristic of play activities is the *presence of 'make-believe'* in them. Stevenson lying on his sick-bed imagined the bed to be a boat and rowed it across an imaginary ocean. A child puts a stick between his legs and runs, imagining the stick to be a horse. The stick becomes a horse through 'make-believe'. This 'make-believe' activity is very useful for the growth of the child mind. It enables him to make such ventures in his imaginary world as the world of reality would not allow. The obstacles are overcome through 'make-believe'. As T. P. Nunn points out, "It is a biological device to secure that his self-assertion during the formative years of life shall not be frustrated by his inability to control the real conditions of his activity." As the child grows older under conditions of healthy development 'make-believe' diminishes in importance. He is more guided by his mature knowledge of the real world and his activities are conducted with a full awareness of his powers. When such is not the case i.e. when an adult lives in a world of 'make-believes' the growth is not healthy. This is a phenomenon of retardation of personality. The insane also indulges in 'make-believes,' but this indulgence is due to lack of adjustment with the conditions of the real world, which should have been acquired by the adult in young age. The child's make-believe, on the other hand, is an attempt to acquire knowledge as well as to adjust oneself to the environment. "Insanity," says T. P. Nunn, "is a phenomenon of shrinkage, of decay, the child's making-believe is a phenomenon of expansion, of growth." Hence the educator need not make special effort to discourage or repress 'make-believe' in the child. He should try to utilise the tendency for the purpose of his education; he should direct it into useful and artistic channels.

VARITIES OF PLAY

The plays of children are an outcome of the combination of internal and external factors—the stimulus from the environment and the nature of the child.

Games of children differ according to *age, sex, temperament* as well as the *environment* in which the child lives. The earliest plays are the play with the body. They are followed by group-games and games of personation. We may classify games as follows.—



INDIVIDUAL GAMES.—The young child plays all alone. He is always making movements with his body. This develops his muscles and nerves. From 8 months to 2 years he is trying to crawl, to stand, to walk, etc., i.e. to gain mastery over the body. After the control of the body it plays with things, that is, those that surround him. Grasping at objects, taking them to its lips, throwing them down are his occupations. He tries to see things, to break them or to hear any noise if they made. All this is destructive activity. In this destructive activity the child learns much even without any desire for learning.

The physical resistance, the inertia, the stability, the rate of movement of objects, their inner constitution all these are learnt through individual games with objects. When the child is 4 or 5 years old a real desire for knowledge may lead to more systematic dissection and understanding of things.

The inner constitution of the child impels him to do these destructive games and thus to increase his knowledge. Destruction and construction go on side by side and the former leads to later. Destruction is the expression to bring changes in objects, to subordinate those objects under its power. Constructive games evolve out of destructive ones after a certain age is reached.

Games of construction help the child to develop his constructive imagination which is so very useful in life. Imagination can proceed only on the basis of concrete experience. The toys of children provide this concrete experience. Child's constructive imagination should be increased by plenty of toys of all sorts including building bricks.

Some psychologists say that differentiations due to sex do not show upto the age of five but others hold a

contrary view. This means the games of children of different sexes will differ from the earliest stage. Boys are more inventive and girls are more imitative. Girls caress and fondle the dolls, the male child seldom does it. The female child will like playing at cooking, nursing; the male child will like playing at soldiers or teaching

GROUP GAMES — To begin with, these games are imitative. A child imitates adults that surround him or some other child. The child is more likely to imitate one who is of his own age than grown up children. Group games arise due to the development of the social instincts such as imitation, gregariousness and submission. The adjustive type of group games require the child to adjust himself according to the needs of the situation. He does not merely imitate other children. He thinks out his part as required by the situation. He has to play his part not of others and the playing of it will depend on his resourcefulness or inventive thinking. Society is an organic unity wherein each member is doing his own function and thus contributes to the good of the whole. Games of cricket, football, hockey etc are of this type. The child in these games *plays with* other children and not merely *beside* them. Each boy does what is allotted to him along with other boys and they combine together to form the game.

When a boy plays with other boys just imitating what the other boys are doing, he is said to be playing *beside*. The highest form of play requires division into groups that may be opposing each other. Here unity as well as difference has to be maintained. Hence play becomes very complex. It is possible to children of grown-up age only.

GAMES OF PERSONATION.— When a child acts the part of an animal or an adult, occupying a position attractive to children, he is said to be playing the game of

personation. Thus the child may act the part of a king, a doctor, or a policeman, or he might act the crocodile or the wolf—all this would mean playing games of personation. The child in such a case indulges in make-believe. The child believes himself to be the person for whom he is acting.

These make-believe plays of children are very useful to the growth of their personalities. They are phenomena of expansion of personality. The child imaginatively learns many things that are valuable to life. The child's repressed feelings of self assertion find expression through these plays. According to Stanely Hall the child's feelings are purged by playing animal games. They are re-capitulatory activities of children and have a cathartic value. Make-believe is regarded by many as compensatory activities of the child mind. What the child lacks in actual reality, he supplies through make-believe. Art, it is said, is nothing but imaginative identification. Just as through art human energies are sublimated, so too in plays of personation the child sublimates most of his repressed energies.

PLAY WAY IN EDUCATION

The play activities of the child are manifestations of its desire for self-expression. In play its true nature comes out. If the development of the individuality of the child we take to be the goal of education, then play is the best means to achieve that end. "It is hardly extravagant to say," says Nunn, "that in the understanding of play lies the key to most of the practical problems of education." The school-curriculum, the methods of instruction and the school discipline should be so devised as to secure the fullest growth of the individuality of the child. This growth can take place only when there is no stifling of the individual's

energy but there is free expression, that is, in so far as, the school activities partake of the nature of the play or a joyous exercise of spontaneity.

The curriculum as it obtains in the present day schools does not pay heed to the demands of the child nature. We take the child to be a miniature adult and try to teach him all that could be useful to him when he grows old. But the child has his own standard of values, hence very often the subjects taught to him are dull and boring. Rousseau condemned this attitude long ago and we should try to embody his sympathetic attitude in the framing of the curriculum. Let him not be forced to learn a language for which there is no preparedness in him or which is not demanded by his inner craving. In our schools there should be more of physical activities in which the child freely engages himself and less of book-work. Such activities as dramatic performances, scouting and excursions should be encouraged. There is in them a free and joyous exercise of spontaneity.

Our methods of instruction require to undergo a radical change. They should be made flexible so as to meet the requirements of different individuals. Knowledge is to be communicated in an interesting and pleasant way and not forced down the throat against the individual's wish and taste. Greater responsibility should be placed upon the pupils themselves for their conduct and progress. Group work should be encouraged. In the school such artistic activities as clay modelling, drawing, music, dramatic performances, debates, gardening, field work etc. should receive due encouragement for they are not only of high educative value but they make the school work a joy to the pupils.

The School organisation has also to undergo a change. The rigid time-table and the rigid class system would not work. They make the school work unnecessarily a burden.

The individual pupil and his creative impulse do not find sufficient room for expression through them. There is to be more individual attention.

The authoritarian attitude of the teacher towards the pupil has to change. He should no longer remain a dictator of the child's activity but a director of his work. The discipline that 'play way in education' would try to develop, would be inner discipline and not the forced discipline that comes from without.

A number of educational methods have recently come into vogue that emphasise the need of play way in education. The New Education Fellowship Society aims to bring about the change which would make the school work a joy to the child. We find the principles of play way embodied in such systems as Froebel's Kindergarten, Montessori System, Dalton Plan Method, Heuristic Method and in the attempt of Dr. Homer Lane to educate the juvenile offenders through developing a sense of responsibility in them—his creation of 'the Little Commonwealth.'

One particular system deserves to be described here in some detail. It is Madam Montessori's system, for it embodies all that has been spoken of as the play-spirit in education. Madam Montessori courageously and resolutely threw upon the child the responsibility of his own education. She reduced the external constraint to a minimum. The children in the Montessori school learn of their own accord a number of valuable habits and in their play acquire much useful knowledge. They learn how to live in society, and how to behave with their equals, inferiors, and superiors. Madam Montessori has devised an apparatus—the *didactic apparatus*, with whose help the children learn through their own initiative, reading, writing and number. They are led to teach themselves in infancy, proper movements of limbs, sensory discriminations, leading gradually to the knowledge

of the 3 R's They are under the supervision of a directress but are allowed to go their own way, at their own time, to choose their own tasks, and to be their own critics The didactic apparatus is based on the principle of auto-correction The children, in course of time, learn to be self-reliant and acquire the power of concentrated attention *

Dr Montessori repudiates 'make-believe' plays, which were so much encouraged by Froebel Her contention is that the child who is allowed to indulge in 'make-believes' makes himself a misfit in the world of reality. Her system has a scientific bias Hence telling stories to children such as fables, and the deeds of mythical heroes, is not encouraged. But here Froebel was more psychological in his methods than Madam Montessori 'Make-believe' has its own importance in the growth of the child It is quite in keeping with the child nature to allow him to indulge in it Many of the plays of the children would vanish if the element of 'make-believe' were taken away from them.

The Heuristic Method is also cited as an example of play way in education, so is the Dalton Plan. In both of them the child's initiative is cared for and developed He is guided but he has to educate himself through his own effort. In the Heuristic method the child is in a way placed in the position of an original discoverer and thus he has the joy of making his own discoveries. There is freedom and spontaneity in the Dalton Plan The element of constraint is reduced to a minimum. The teacher guides but does not lecture or force him to do the task before him, in the same way as we find in our ordinary schools.

*Of course, there are critics of her system who point out that the child is not given sufficient freedom to express himself as he would like. The "didactic apparatus" of Madam Montessori is like a Procrustes bed which does not tolerate individual difference in likes and dislikes The child's freedom to act is limited to his acting in the prescribed manner He should play with nothing else except the didactic apparatus and that also in the manner conceived of by Madam Montessori.

The Boy Scout Movement is also an attempt to make use of the play impulse of the child for his education. The child has to live under an organisation, obey discipline, and work according to certain laws. He thus learns social habits. The scouts make excursions, organise rallies, make shows, all these activities are ways of utilizing the play impulse of the child. Their educative value is quite obvious.

References :—

1. T. P. Nunn—*Education . Its Data and First Principles*.
2. Lord Lytton—*The New Treasure*.
3. Miss Berzley—*The Little Commonwealth*.
4. Curtis—*Education through Play*.
5. Homer Lane—*Talks to Parents and Teachers*.
6. Stern—*Psychology of Early Childhood*
7. McDougall—*Social Psychology*.
8. Montessori—*The Montessori Method*

CHAPTER IX

EMOTIONS.

We have been dealing so far with the conative aspect of the child's nature. Before we proceed further it is worth our while to turn to another aspect closely associated with it. It is said that the springs of actions are emotions. If there is any truth in such a statement we ought to examine the nature of emotions, how they determine human behaviour and in what way they can be utilized for the purpose of education of the child. It is gradually being revealed by psycho-analysts that a great deal of misery of human beings is due to undisciplined or misdirected emotions. A happy man is one who has well-trained emotions. We have to point out as to how the emotions of the child can be trained.

GENERAL NATURE OF EMOTIONS.

SUBJECTIVE CHARACTER — Emotions are the most individual experiences in our lives. They are least open to observation or objective study. As William McDougall points out, "In the presence of the same object, the emotional experiences of different persons may be different and even those of the same person on successive occasions may vary widely with changes in general conditions."* Thus two boys may be looking at a foot-ball match standing near each other. They are keenly interested in the game; their emotional states seem, to all appearances, alike. Presently a player shoots the ball into the goal of the opposite party. Instantly one of the boys jumps up; he

* *An Outline of Psychology*, P. 315.

shouts and claps his hands with joy. But the other boy is shocked with the scene ; he is crest-fallen. The objective event is the same for both the boys, but the emotions felt by the two boys are entirely different.

Similarly how a news will affect a person will depend entirely upon his mental make up. The defeat of the Russians at the hands of the Japanese was an occasion of sorrow for the Tzar, but the same event brought immense joy to the revolutionaries. A witty remark which evokes a peal of laughter throughout the audience may make a particular person very sad, because it did not accord with his nature or was at his cost. We often mis-judge people with regard to their emotions, for emotions are things of the heart and we can know about them only in so far as an expression of them is made in external behaviour. Where such expressions are wanting we cannot know the emotion of a person. This shows that emotions are highly subjective in their nature.

FEELING—THE CORE OF AN EMOTION —The core of an emotional experience is feeling. Feelings are elementary states and exist to some degree at all times. Everything that we know has a feeling tone. The primary feelings are only two—the feeling of pleasantness and the feeling of unpleasantness. “There are,” says Seashore, “two kinds of affective qualities the agreeable and the disagreeable. the pleasant and the unpleasant ; those that represent the attitude of attraction and those that represent the attitude of repulsion or escape, and there are only two ”* From these two primary feelings originate the various

* Seashore *An Introduction to Psychology*, Chapter on Emotions.

This is quite in keeping with the view expressed in Indian philosophy and literature. The two feelings are named as *Rag* and *Dvesh*, *Anurag* and *Virag*, *Rati* and *Virati*. Wundt, however, maintains that there are six elementary feelings. Beside the feeling of pleasantness and unpleasantness, there are feelings of strain, relaxation, excitation and quiescence.

emotions. Feelings are elementary and do not produce any violent reactions on our part. When, however, feelings are violent and the composure of our mind is disturbed we have no longer feelings but emotions. An emotion thus is nothing but an intense and violent feeling of a pleasant or an unpleasant kind which is sufficiently strong to disturb our mental composure.

PRESENCE OF A CONATIVE URGE —There is always a conative urge present with every emotional experience. The strength of an emotion depends on the strength of this urge. In the chapter on instincts it was pointed out that every instinctive experience has a characteristic feeling tone, that is, an emotion goes along with an instinct.

The several instincts are named and classified on the basis of instincts with which they are associated, an emotion, on the other hand, is aroused whenever there is furtherance or thwarting of an inward urge. "If the conative urge could be abstracted from an emotional experience, without other changes," says McDougall, "that experience would be radically altered. We could still think of the object, and our thinking would be coloured by the emotional quality: but the whole experience would be profoundly different, it would seem to lack its very essence, to be empty and unreal. It would be like the simulation of an emotion. We cannot, then, properly abstract from this conative factor, in describing or discussing emotional experience. That impulse to action is an essential feature of emotion is recognised by common speech and literary usage, as when it is said that anger or fear or disgust makes us do this or that, or impels us to act."*

Stout calls this association of an emotion with a conative urge as its parasitical character. An emotion pre-

* *An Outline of Psychology* P. 321.

supposes the existence of a specific tendency to act. Thus, for instance, anger is aroused in a cat or a dog when some one interferes with its young ones. The anger pre-supposes the existence of a tendency to protect ones' offspring. The obstruction of a strong conative urge creates anger, its furtherance creates joy.

PERSISTENCY —An emotion when once aroused tends to persist and leaves behind an emotional mood after it is over. The mood fastens itself on any object which presents itself to it. An angry man remains in the state of anger for long and tries to vent his feelings on any one without judging whether the victim is innocent or guilty. "The cook angered by her mistress will rouse the ears of the scullion, a herd of cattle, enraged by the sight of a comrade in distress will vent their fury on their unfortunate companion, the reason being that he is the only object on which their attention is fixed. Their excitement must find an outlet and in the absence of any definite channel for it, discharges itself on the injured animal."*

SWING OF AN EMOTION —Morgan and Gilliland have pointed out an important characteristic of emotion in what is called an *emotional swing*. The emotional mood may not persist in the original form. As the circumstances change the mood may change—the one excited state yielding place to another of a different nature. Anger may yield

*Stout, *A Manual of Psychology* p 408. Stout quotes Hudson, *the Naturalist in La Plata*. "It is some times seen in dogs, when three or four or five are met together that if any one suddenly utters a howl or cry of pain when no man is near it and no cause apparent, the others run to it and seeing nothing turn round and attack each other."

The Wars of the Roses of England, the Hindu Mughal riots in India can be thus explained as due to the persistence of the mood of anger, once aroused by a different cause, fixing itself on quite a different object. When the boys have become excited to anger once, they will quarrel with each other for trifles.

place to fear or love as the changes in the environment occur.* This is essential considering the nature of the function they serve. An emotion makes the organism better prepared to meet new situations.† If the emotion remained fixed it would be useless. The original response of a man to a person or a situation is no sure index of what his final response would be. "If you are anxious to gain the good will of a person, some sort of emotional reaction is better than total indifference even though the emotion is not of the type you wish" ‡ Children who are often found complaining about each other may be in better relation with each other than those who do not complain. The child who teases his sister is really anxious to evoke his love for him. He is a practical psychologist for he in his innocence knows that nothing is emotionally so bad as cold indifference on the part of any one

WIDE RANGE —Emotions can be aroused in the young as well as in the old, they occur at all levels of mental development. At suitable occasions all are subjected to emotional states. The baby fears a cat, the adult fears a tiger. The child gets angry if some one snatches away his toys, a man gets angry if some one criticises his conduct. Even a saint is not free from emotions. As the experience of the child grows his emotions become

* Let us take an example to illustrate this point, suppose a man is stung by a bee, he feels angry. But he sees that there are a large number flying about him, if he waits he would be stung by many more. His anger yields place to fear. He runs. Now as he goes home he thinks that he would not be able to attend a party for which he was invited as his face looks swollen. This makes him sad. Then he thinks that his friend who is to visit him a few hours hence would express his sympathy for him. He feels affection for his friend. But as the friend comes, he laughs at the man's swollen face; his love is turned into anger and hate. Thus changes occur in emotions.

† The writer watched a snake actually being killed by black ants as the snake wanted to wreck vengeance on every ant that bit it.

‡ Morgan and Gililand. *An Introduction to Psychology* Chapter on Emotions.

conditioned Originally the child fears very few objects but gradually the number of objects of fear increases through the conditioning of the emotion of fear.

PHYSIOLOGICAL ASPECT OF EMOTIONS.

Emotions are closely associated with physiological disturbances in our body Peculiar organic sensations are aroused along with an emotion These organic sensations and other physiological disturbances form so important a part of an emotional experience that many writers have identified emotions with physiological disturbances themselves "If we fancy some strong emotion," says William James, "and try to abstract from our consciousness of it all the feelings of its bodily symptoms we find we have nothing left behind What kind of an emotion of fear would be left, if the feeling neither of quickened hearts, nor of shallow breathing, neither of trembling lips, of weakened limbs, neither of goose-flesh nor of visceral stirrings were present, it is quite impossible for me to think Can one fancy the state of rage and picture no ebullition of the chest, no flushing of the face, no dilation of the nostrils, no clenching of the teeth, no impulse to vigorous action but in their stead limp muscles, calm breathing and a placid face? The present writer, for one, certainly cannot. The rage is as completely evaporated as the sensation of its so called manifestations."

⁴ Of course, a number of writers do not subscribe to the above view Stout and McDougall point out that emotions are essentially mental events, but they also point out the importance of organic disturbance in the colouring of an emotional experience "We cannot imagine," says Stout, "what an emotion would be like apart from the organic sensations which it include" Even in faint and transient emotional experience the organic element appears normally to be present."

Manual of Psychology, p. 414

Emotions and Autonomic Nervous system —The physiological disturbances referred to above concern mostly with the working of the autonomic nervous system. There are certain glands called the ductless glands that become active whenever an emotion is aroused. In the case of anger the adrenals manufacture a great quantity of adrenalin and discharge it into the blood. This stimulates the nervous system and the organism becomes prepared to meet any emergency.* The increase in the amount of this substance itself predisposes any person to an emotional excitement, just as the presence of a large amount of war material predisposes nations to fight.

EMOTIONAL HABITS.

When an emotional experience occurs again and again it tends to produce an emotional habit. These emotional habits are variously named: attitudes, moods, temperaments, sentiments. The child develops an attitude of love for the puppy when it repeatedly expresses affection for it; he may similarly develop an attitude of repulsion towards certain objects because the latter often displease him. When the attitude is of a short duration, it is called a mood, but when it is of a long duration it is called temperament. When it is very short and violent, it is called passion. An emotional attitude, that is of a long duration and is

* "As a result of the presence of adrenalin" says Seashore, "the nerve cells become more sensitive, more sugar is poured into the blood from the liver, more red corpuscles are thrown into circulation, the blood is redistributed, being withdrawn from the internal viscera and hurried to the skeletal muscles and the brain, the heart beats more strongly, the eye sees more keenly, the ear hears more distinctly, the breathing is more rapid, the temperature rises, the hair of the head and the body become erect, the skin gets moist and greasy, the pupils dilate, blood vessels are contracted, and the activities of the alimentary canals are inhibited"—*An Introduction to Psychology*, p. 319.

complex, is called a sentiment. An unhealthy sentiment is now generally called "*a Complex*," a term made current by the psycho-analysts

The word sentiment is used by McDougall in a special sense. It is an enduring conative-affective structure of the mind. "A sentiment involves an individual tendency to experience emotions and desires in relation to some peculiar objects. It is an enduring conative attitude towards some object induced by the experience of the object." A sentiment is just like an instinct, but whereas in the case of an instinct the conative-affective mental structure is inherited, the structure in the case of a sentiment is developed within the life of the individual. It is a specialised acquired conative-affective tendency. The object of a sentiment is very particularised. Thus one may have a sentiment for his books, for a dog, for a person or for the country. Friendship is a sentiment of love for a person, patriotism is a sentiment of love for the country. When a person repeatedly evokes a feeling of affection for him, there is built up in our minds a sentiment of love, called "friendship". Similarly when on several occasions the child feels or expresses love for his country, he develops a sentiment of patriotism.

THE SELF-REGARDING SENTIMENT.—A sentiment may be for concrete perceptible object or it may be for certain ideas and ideals of life. One develops sentiments for views he has to often express emphatically. Mahatma Gandhi has developed a sentiment for truth and non-violence. The various sentiments are organised in a unity. This unity is the self of a man. According to McDougall there is a self-regarding sentiment, just as there are other sentiments. It is the master sentiment which organises and controls other sentiments, in fact it is this self-regarding sentiment which governs all

conations and feeling. In the development of the self-regarding sentiment lies the essence of character. The self-regarding sentiment is in the beginning built up in relation to body, it, in course of time, extends to surrounding objects, particularly those that the child possesses. It then extends to the family, to relations, to moral ideas and ideals. Thus the individual develops an ego sense—the "I" or "me," as his mind evolves and develops enduring attitudes towards objects and persons that surround him.

The self-regarding sentiment further extends to moral ideas or ideals of life. Thus is the personality of character of a man generally developed. Here McDougall has used the word sentiment in rather a very comprehensive sense. It no longer stands for mere emotional habits but rather for the whole of the acquired mental structure.

THE TRAINING OF EMOTIONS

NEED OF THE TRAINING OF EMOTIONS —Emotions play very important part in the individual and social life of a man. They determine to a very great extent his physical and mental health. They also determine whether a person will be liked in society, will gain the admiration and affection of his neighbours or will be treated as a nuisance. A person of an irritable nature, or one suffering from a general state of mental depression is seldom liked by any one.

We have described above the physiology of emotions. When an emotion is aroused the endocrine glands—the adrenal, the thyroid, and the pituitary glands, begin to work vigorously. Certain emotions go along with a normal flow of gastric and salivary juices, in the case of others the flow of these juices is slowed or stopped. A depressing

emotion usually retards the flow of the substances that help digestion and if an individual is constantly visited by such an emotion, chronic indigestion may result. Persons of an irritable temper are liable to suffer from indigestion more than those who have a cheerful, sanguine disposition. Similar is the case with persons who are easily excited to the emotion of fear. Fear and anger invariably take a heavy toll from the physical health of everyone they visit. The less one entertains them the better for the health of his body and mind.

Anger in a violent form shakes the whole constitution of man and if a person is constantly subjected to fits of anger, he will very soon begin to suffer from many forms of formidable diseases. The normal functioning of the thyroid is affected both by anger and fear with the result that a constant arousal of these states tear down bodily health. R. W. Trine, in one of his books *'In Tune with the Infinite'* points out that a baby died of blood-poisoning at the mother's breast while sucking, due to the mother's being seized by a sudden fit of anger. What is known as spiritual healing consists in changing a person's emotional attitude towards his surroundings. A falling state of the mind is a precursor to a falling state of the body. Fear, it has been empirically determined, diminishes considerably a person's ability to resist disease. One is easily caught by the disease one fears much. A general state of fear makes one liable to all kinds of ill-health. Disease germs that are ever on the look out for a suitable prey attack the organism whose power of resistance has been diminished due to state of fear, even as robbers easily attack fearing citizens.

There are certain emotions that accelerate digestion and help in the building up of the body. The emotion of love, of joy are of such a nature. These are expanding emotions. In a state of joy or of love there is ample

secretion of those juices that help digestion of food. Hence it is a happy advice "Never allow bad, depressing thought to visit you while eating" Eat with a friend rather than alone. After dinner laugh a while What affects health is not so much what you eat but how you eat The emotions of love and joy are conducive to life as those of anger and fear are conducive to death. This is as much a physiological truth as it is a spiritual one.

Thus we see that an emotion affects bodily health favourably or otherwise according to its nature It affects mental health to a much greater extent. Emotions, we have pointed above, often persist in the form of moods If these moods are of a sufficiently long duration and if they constantly occur they create a sort of peculiar temperament. This we might call the acquired nature of a man. A study of personality shows that many undesirable types of personalities are formed due to a wrong training of the emotions. The elated, the depressed, the irritable and unstable types of personalities have been so formed due to the fact that no care was taken in early child-hood about the training of the emotional nature of the individual All the various kinds of social misfits—the blaming, the suspicious, the seclusive, and the show-off types of individuals are the products of wrong education or no education.

The child suffers from many kinds of emotional repressions in early childhood These repressed emotions create disturbances of personality in later life and often become the cause of several forms of mental diseases. A general fearing attitude may be generated by repressed fear. Gault and Howard point in this connection to the story of a fireman who became so fearful of inert telephone poles that he could not pass one without a shudder. This was caused by a very unhappy experience. Once while going on his wagon to fight a fire he was saved by a hair's

breadth from being crushed to death against a pole. As a matter of fact he received much injury. When he recovered from his illness, he acquired a permanent horror for the poles. Similarly a young woman acquired fear of church bells and towers due to their being associated with a depressing emotion. She heard the hourly tolls of the church bell nearby while she was attending to her mother who lay at the point of death for a long time in a hospital prior to a serious surgical operation. A man may become a mis-anthrop because in early life he was severely treated and suffered from many privations. Juvenile sex experience at times gives rise to many forms of emotional complications. The emotional attitude once generated transfers itself to new situations which may have very little in common with the situation that first generated the emotion. Often the person in such a situation rationalises to justify his peculiar behaviour.

A whole philosophy may be propounded to justify the emotional attitude. Rousseau felt angry at being chastised by his teacher for a juvenile offence and so he propounded the doctrine: "Every thing is good as it comes from the hands of the Author of Things, every thing corrupts in the hands of man". Stevenson could not concentrate his attention on studies and we get from him *the Apology for Idlers* and the statement "Truth is not at the botton of the well or at the far end of the telescope". Mahatma Gandhi acquired in childhood an abhorrence for meat-eating and gives to India his political philosophy of Non-violence. Everywhere repressed emotions are at the root of all abnormalities and rationalisations.

The writer recently met a person suffering from an obsession that he will be hanged shortly in future. He told him how the fear generated. Of course, it could not be the real cause. He pointed out how the situation causing

this fear changed from time to time. Thus the emotion fixes itself on any trivial situation. The roots of the fear lie in some form of emotional repressions suffered in early childhood. Psycho-analysis has devised a method of digging out these repressions and through catharsis has been successful in curing many cases of such obsessions. Brooding on gloomy thoughts, melancholia, persecutory delusions etc. are by analysis found to have their roots in some emotional complex of early childhood. The patient through a process of rationalisation builds up a delusion to justify his living in a particular mental state. When one is depressed one naturally clings to gloomy thoughts. If one thought is removed another at once occupies its place.

All this points to the great importance of the training of emotions in early childhood. Whether we take the aim of education to be development of the individuality of the child, or building a strong moral character, or whether we take it to be social efficiency, from any point of view the training of emotions is necessary. One who is not himself happy cannot make others happy. We can communicate to others what we ourselves have. Cheerful persons add to the joy of the world, while sad ones spread a gloom all round. Stevenson said "A happy man or woman is a better thing to meet than a five pound note." We would say it is much more. Health whether of body or of mind is contagious as well as disease. Hence a person of cultured emotions is a boon to society. "Lower natures serve others," says Emerson, "by what they do; higher ones by what they are."

HOW TO TRAIN THE EMOTION OF THE CHILD

We shall now expound some of the principles of training the emotions of the child.

REDIRECTION.—The very first thing that we have to bear in mind with regard to the training of emotions is that none of them require to be unconditionally repressed. There is no emotion but has its value in promoting the well-being of an organism. Just as no instinct as such is bad so too no emotion is bad in itself. It is mostly its use that is good or bad. A misdirected anger may, instead of injuring the opponent, bring the destruction of the angry person himself. But anger as such is not for that reason bad. He who cannot at times be angry cannot be expected to fight for a righteous cause, to defend the weak from the outrages of the strong. The emotion of anger supplies the energy to that organism necessary for fighting. Without this energising power, one would not be prepared to fight the odds that sometimes one has to face. Hence exhibition of anger at proper moments is useful and desirable. But to be angry at trifles, to be easily irritated by the behaviour of ones' dependents, neighbours and friends shows a misdirection of the emotion. It has to be controlled at such occasions. An emotion is like the motive power that moves an automobile, without the force of the motive power the engine would not move, so too without emotions one would not be actuated to action. But the automobile has to be kept on the track through proper direction of its movement. Let the child be made to feel angry at one who does injury to his school or class rather than to his person. Nicknaming the school should be resented by children much more than nicknaming themselves. Similarly it is not wrong to make the children feel angry at the injury done by any invader to his country. The child who defends his weaker class-fellow from the attack of some bully should be praised for his valour. The writer knows a teacher who went to the extent of punishing a child because he ran away when his companion was attacked by a boy who was stronger than either of them. Such an act of cowardice should receive universal

condemnation. How can we expect the emergence of heroes who would be ready to lay their lives at their country's cause if we suppress the expression of valour in early life

What is true of anger is equally true of fear. The child should not fear darkness, ghosts or closed spaces, but he should surely fear doing wrong to any one. He should fear God. He should fear the lawfully constituted political authority. Without such fear, there will be no social order or moral discipline. But let the child be not constantly excited to the state of fear, lest he should grow timid. There should be few things only that the child should fear.

We have taken illustrations of two of the coarser types of emotions and shown how, if properly directed, they can be of value to the child. This is much more so in the case of other emotions, that is, those which are called finer emotions. As a matter of fact the division of emotions into lower and higher is only conventional and unscientific. "The higher emotions", say Gault and Howard "are not really higher. They are aroused merely by different objects than those that incite the primary emotions". A beautiful painting on the wall arouses the emotion of love and fear as a real situation may do but it is in a subdued form. The primary emotions themselves when expressed in a quiet, subdued and subtle form look as higher emotions. Now this expression very much depends upon the kind of object which excites the emotion.

The process of redirection of emotions is very much like the process of conditioning of a reflex act. Fear is usually excited by objects that are likely to cause injury to the organism. But an innocent object may also be feared due to its being associated with some other object that has been feared. The experiments

made by Watson amply demonstrate the truth of the above statement. A young child began to fear a rabbit whom it previously liked. The experimenter changed the child's attitude by producing a startling noise each time the rabbit was brought before the child. The child feared the noise but it began to fear the rabbit due to its being associated with the noise.

The child loves the mother, hence it begins to love all that is associated with the name of the mother. Cowper's sentiment of love towards his mother was aroused at the sight of the mother's picture. Love of the motherland is similarly conditioning of the emotion of love for the mother. Thus are the various sentiments built up. The sentiment of patriotism, the religious sentiment, the sentiment for certain ideas are thus built by making children feel in a particular way towards certain class of object. They are all cases of redirection of emotions.

SUBLIMATION—Sublimation of emotions is also an important method of utilizing them. It is nothing but a form of redirection of emotions. The emotions instead of being directed towards unworthy objects are directed to those that are thought worthy by society. It is not permissible for a woman to love another person while her husband is alive, if she has such a feeling it is regarded reprehensible. But she may love Krishna, a religious deity conceived by her own mind. This is not only permissible but laudable. Thus religion is built on such redirected or sublimated emotions. Art likewise has its root in sublimated emotions. Music, said Aristotle, is the catharsis of the soul. Many emotions which would otherwise create a chaotic state of the mind are sublimated through music. Painting likewise gratifies emotions as well as subdues them. The teacher should redirect the emotions of the child to the several forms of artistic pursuits if he wants to build up a happy and healthy personality of his pupil.

TRANSFORMATION —Closely connected with the problem of sublimation of emotions is the problem of transforming the energy of one emotion into another. It has been pointed out as one of the characteristics of emotions that there is a swing of emotions. When one emotional state is aroused it changes itself into another according to a change in the situation. Anger may yield place to fear, and fear to disgust, and that to love. If this is psychologically true, then it should be possible for the teacher to turn the emotion of anger towards a stranger into love for one's fellows. Anger is a negative, a destructive state of the mind, it can be changed into a positive or constructive one.

But there are limitations to this transformation. If we are to believe McDougall, the various forms of energy that are connected with different impulses are not at all capable of being mutually changed. Thus the emotion of fear will have its unique quality, so also that of anger. But the elements that are common to both the emotional excitements may be utilised by either of them as the occasion arises. Let the teacher, however, always see that every expression of an emotion is desirable and directed to worthy ends.

INHIBITION —The undesirable forms of emotional expressions have to be inhibited. Without this society would be a chaos. As Gault and Howard put it, "Let the learner be schooled to express his emotional reactions to objects that please the eye and ear, to those that displease. And let him understand the inefficacy of violent out-breaks of primitive emotional behaviours to the end that he may acquire the habits of inhibiting them Nobody does or can live alone, excepting Robinson Crusoe, and even he had his man Friday. For the reason that hosts of people are living elbow to elbow it is quite necessary to apply brakes every day to our personalities

and even to keep them on in spots as it is to open the throttle" Fearing lest a repression of their emotions should occur we have not to allow children to indulge in back-biting, grow quarrelsome or indulge in obscene jokes The teacher who connives at such things has missed the whole purpose of education

MENTAL OCCUPATION —It has been said that an empty mind is a devil's work-shop This is true in more senses than one When a child is engaged in some rigorous pursuit, all his energy is being consumed in that occupation He has no available energy to indulge in any superfluous emotional states When the mind is vacant, one is subjected to undesirable kinds of emotional states But this does not happen when one is seriously engaged As Carlyle says "Doubt, desire, sorrow, remorse, indignation, despair itself lie like hell dogs beleaguering the soul of the poor day worker as of every other man, but he bends himself against his task and all these are quelled, all these shrink murmuring far off into their caves"

The above view can be supported from what we know about the relation of the sympathetic nervous system (which determines greatly emotions), to the central nervous system that guides all our thinking and actions The anatomical and the functional relations of the sympathetic nervous system to the central nervous system are such that any activity of the latter directly affects the former "Inhibitions and incitations of emotional reaction occur" say Gault and Howard, "somewhat as a by-product from the plane of voluntary action and thinking." Thus training in observation, memory, imagination and reason which keeps the central nervous system at work implies also the automatic inhibition of many undesirable forms of emotional expression When the activities of the brain are kept on going in a proper order, the vulgar emotions do not get a chance of expression.

CATHARSIS :—From time to time it is necessary that some amount of catharsis be provided for feeling that are suffering from social taboo. In society, the presentation of the ludicrous, the jokes, the festival provide it. Something of the sort has to be done in the school also. One who wants children to remain all time serious, ignores the demands of human nature. There should be occasions for laughter, play and fun. Everything in moderation does good to the health of an individual as well as of society. It is only excess that is bad.

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CHAPTER X

LEARNING PROCESS

The original behaviour of any organism is changed through its contact with the environment. Its reflexes are conditioned and instincts modified. This change is required to enable the organism to adjust itself more effectively with the environment than what is otherwise possible. This process of change which enables an organism to adjust itself to the environment and thus to derive more satisfaction from its life activities is called *learning*. Learning is nothing but benefiting oneself by the experience of the past. There is rudimentary learning even in the lowest of organism. Animals learn more than insects, and man learns most. Man takes lesser time to pick up new adaptations, while insects and animals take a very long time. Some insects cannot change their behaviour appreciably with the result that when a new situation arises, they cannot adapt themselves to it and consequently perish.

LAWS OF LEARNING

We shall here explain the laws that underlie the process of learning. Psychologists have generally agreed on the point that there are three laws that operate in the process of learning of all the living beings from the lowest to the highest—from the stentor to man.

These laws are .—

- (i) The Law of *Trial and Error*
- (ii) The Law of *Practice or Use*
- (iii) The Law of *Satisfaction and Dissatisfaction*.

THE LEARNING OF THE STENTOR—Professor Godfrey Thomson has described the learning of stentor which deserves attention. "There is a certain microscopic organism in the water which is known as the stentor. Its shape is like a trumpet. It has also got a tubelike thing into which it withdraws itself for protection. When it takes water in, small fragments of edible substance enter its stomach and thus it gets its food. Whenever some obnoxious substance enters its mouth it tries to get itself free from it, first by bending to one side and if it does not suffice, its cilia changes its flickering to reverse the current. One can see it when a little particle of carmine dye is put into the water. If the animalcule does not succeed in getting rid of the obnoxious thing even after repeated efforts then it contracts itself into the tube. But presently it emerges out again. If the dye is again introduced the former efforts are repeated, first bending and then cilia reversal and then contraction. If the dye is introduced every time the effort to sweep it away by ciliary movements vanishes gradually. At the end it takes protection inside the tube. If the dye is continued to be introduced the animal jerks itself away and swims off to another place."

In this we find, if superficially viewed, nothing that can be called learning. The stentor has got some responses to the obnoxious thing in the water. But when we see more carefully the whole thing becomes quite clear. We see all the laws of learning operating here.

1. After continual trials and the committing of errors by the stentor it enters into the mind of the animalcule that when the obnoxious thing is continuing to come, it is no use trying to remove it by the reversal of the cilia or contracting itself into the tube. It is better to leave that place and take asylum in some better place.

2. By going from place to place it becomes a habit and as soon as the obnoxious thing is seen in the water it at once leaves that place.

3 It is dissatisfied by the presence of the obnoxious thing in the water and finds satisfaction in going to another place which is free from it

THE LEARNING OF THE CHICKEN —Animals of higher grade do not respond in such an orderly way. It also cannot be said as to which response will be made first. Suppose we shut up a hungry chicken inside an enclosure which is not sufficient for it, and from which there are two passages, one being a blind alley and the other leading to food and its mother hen. Now the chicken makes blind effort to free itself. It dashes against the walls and rushes along the passages, without any discrimination. After much effort it reaches its mother. The next time it is put there, it takes a little less time to reach its mother. The thing continues until at last the chicken goes straight through the right passage to its mother as soon as it is put into the enclosure. Now if instead of two passages there are three and the third passage is so arranged that when the chicken passes through it, it receives an electric shock. The chicken will learn to avoid this electrified passage sooner than it will the non-electrified ones

1. After undergoing the trial and committing so many errors the chicken learns to go to its mother or to food through the right passage.

2. The practice of going so many times through the right passage makes it perfect in that business and at last, as soon as it is put in the enclosure, it goes straight to its mother through the right passage

3. It feels annoyed in remaining in the enclosure. To go through the electrified passage is to receive the electric shock and going along the blind alley is to go to disappointment and dissatisfaction. It finds satisfaction in going to its mother and getting food. This is done when it learns to go through the right passage.

THE LEARNING OF MAN — Man is a rational animal. He has got the power of reasoning and he can distinguish at once what is right and what is wrong. Hence he stands high above the animals. This power of reasoning enables him to learn things quickly and retain for a longer time than the animals.

Now let us compare the behaviour of man with that of the chicken and see what he does. Suppose a hungry man is shut up in a room which contains two passages, one being a blind alley and the other leading to the dining room. The man's behaviour will be quite different from that of the chicken. He will not rush towards the wall aimlessly. He will go through one passage and if he finds it wrong then he will return and go through the other passage, and enter the dining hall coolly. If he is placed into the same room a second time, he will at once select the passage which leads to the dining room. Man remembers and acts accordingly.

Now we should see whether the situation in which man is placed is really comparable with that of the chicken. It is not. But if a giant were to thrust a man in a dark dungeon, the man would also aimlessly try to free himself from the situation. He is dissatisfied with his situation and will find satisfaction when he escapes from there. If a mechanical puzzle is given to a man he will also be seen making the trial and error movements. Thus it is quite obvious that there is no essential difference, but only one of degree, between the chicken's learning and man's learning.

But one thing we must note ; it is that man can learn in two ways, one through *Trial and Error* and the other through *Insight and Understanding*. In some provinces man uses trial and error process alone. For instance learning to drive a car, in which one can become master

only after doing it many times, requires practice or trial and error. Man, however, escapes from so many ordinary handicaps and difficulties by his insight and understanding which the animal cannot do. In this respect alone man is superior to other animals.

In the learning of the child all the three laws are seen to work. When the child sees a hurricane lamp it is very anxious to go near and catch it. When it puts its hand upon the lamp and feels the heat, it at once takes back its hand. After sometime it again wants to touch the lamp. Then a time will come when it will not go near the lantern for fear of burning its fingers. In this instance we find the operation of the laws clearly.

1. The child learns not to touch the lamp after committing errors many times

2. After sometime it fears to touch the lamp and turns away. This practice of turning away makes it withdraw its hand as soon as it sees the lamp near it.

3. The burning sensation caused by the lamp when touched makes the child dissatisfied and it finds satisfaction in remaining at a distance.

THE MEANING OF INSIGHT—We have pointed above that the law of trial and error, satisfaction and dissatisfaction, and the law of use underlie all processes of learning. Human learning as well as that of lower animals takes place according to these laws. Koehler disputes the view that trial and error is at the basis of all learning. He experimented with chimpanzees and came to the conclusion that insight is a great factor in learning. The learning through insight according to Koehler is fundamentally different from trial and error or hit and miss process. The animal through insight seizes upon the

correct solution of getting over the difficulties. But as, Thorndike points out, this insight is a case of rapid learning. "Insight is an unanalysed form of learning and one in which trial and error still play an important, though hidden, part."

Human learning is essentially learning through insight. It is much more rapid than what it is in the case of animals. This is due to the fact that human beings are capable of thinking with the help of ideas. Animal thinking is at the perceptual level as they cannot make use of words and have no power of abstract thought. All their learning takes the form of trial and error through actual movements of limbs. Human beings on the other hand carry out this trial and error process at the ideational level and with the help of their imagination. They are capable of foreseeing the result of any proposed line of activity. Animal learning, in other words, is mostly carried on through bodily movements. Human learning is carried on, on the other hand, through imagination.

THORNDIKE'S LAWS OF LEARNING

Thorndike has formulated three laws of learning. He conducted an experiment in the learning process of animals and after gathering a vast amount of data he formulated his laws. They are of great value to a teacher. They underlie the process of learning of each child. We shall therefore state these laws and try to explain them in some detail.

Trial & Error

THE LAW OF EFFECT.—This law runs as follows: "When a modifiable connection is made between a situation and response and is accompanied or followed by a satisfying state of affairs, that connection's strength is increased, and when such a connection is made and accompanied or

followed by an annoying state of affairs its strength is decreased" In other words, satisfaction tends to fix a learned pattern of behaviour, and dissatisfaction tends to root it out This law is sometimes known as the *law of satisfaction and annoyance*. We like a number of things and dislike others simply because the former yield satisfaction and the latter bring annoyance Hence this principle underlies all our learning and is the basic principle of learning Mere trial and error working mechanically will not result in learning The animal does not blindly keep on trying and erring but it tends to retain those pattern which yield satisfaction and dislike those that do not bring it That is, in the trial and error process, it is satisfaction that guides the whole activity.

Thus for good conduct, honesty, industry, punctuality etc. the child is praised. He gets satisfaction thereby and these patterns of behaviour or virtues become fixed. Dishonesty, laziness and irregularity etc. are blamed The child does not get satisfaction through these forms of behaviour Hence they tend to be eliminated The teachers should never associate anything good or useful to the child with something annoying Thus school tasks should never be given as punishment, otherwise the result would be that the studies would be associated with something annoying and the children would forget rather than remember them

Practice & Use -

THE LAW OF EXERCISE OR FREQUENCY—This law has two parts—use and disuse *The Law of use* is "when a modifiable connection is made between a situation and response, that connection's strength is, other things being equal, increased" *The law of disuse* is—"when a modifiable connection is not made between a situation and response over a length of time, that connection's strength is decreased" It is an old saying—'Practice makes a man perfect.' The nervous connections that are

formed between two nerve fibres get strengthened due to use. The travelling of the nervous current along this path becomes easy. On the other hand disuse weakens the bonds of the nervous system. Thus learning becomes difficult.

The law of exercise and the law of effect usually work hand in hand. We do a thing again and again, remember an event several times simply because they yield satisfaction. There is no inclination mentally to go over something which is unpleasant. Thus disuse naturally goes along with an annoying process. In teaching a lesson repetition is a very good device, but repetition loses its value as a method of learning if it becomes unpleasant or the matter repeated itself is unpleasant. In the child's learning process and habit formation this fact has to be borne in mind by the teacher.

With the *law of practice* are associated two factors—intensity and recency. The more intense the stimulus the deeper is its impression. Hence to make such an impression lasting constant repetition is necessary. Interest in the situation strengthens the intensity of the experience. Hence learning becomes easy. The factor of recency is really a form of the law of use. What has been recently learned is remembered simply because the nervous connections are fresh and time has not played its part in effacing those connections.

Satisfaction & Dissatisfaction

THE LAW OF READINESS.—This law states "When any conduction unit is not in readiness to conduct, for it to conduct is annoying. When any conduction unit is in readiness to conduct, for it not to do so is annoying." This law means that satisfaction follows the doing of the work for which there is preparedness in our mind, whereas doing a work for which there is no preparedness in our mind or not doing that for which there is preparedness is

annoying The boy who is checked from answering a question which he can answer very well feels annoyed. He feels satisfaction if he is pleased when he is allowed to answer. He also feels annoyed when he is asked a question which he cannot answer or for which there is no preparedness in his mind. In class teaching the teacher has to bear this fact very well in mind, he should so frame his questions as to give opportunity to every body to show his ability to solve them. Though the question is put to the whole class, while selecting individuals to answer it, the teacher should always take into consideration the mental preparedness of boys to answer a particular question. Learning can never take place through constant annoyance. It must be a process in which a series of victories are won.

THE PROGRESS OF LEARNING

The progress of Learning depends on several factors. Some of the important ones are the amount of practice, interest, attention, the method of learning, the amount of learning previously acquired, the spacing of the practice periods, the age and the hereditary equipment of the learner, fatigue, physiological conditions, knowledge of success and failure, the absence of worry etc. There are individual differences in the power of learning and the same individual shows varying progress under different conditions. Hence it has been difficult to determine the rate of Learning of different individuals. Psychologists, however, have gathered valuable information with regard to the types of learning in which mechanical skill predominates such as telegraphy, tapping and typing.

PLATEAU OF LEARNING —We are giving below curves showing progress of students in learning telegraphy. They show that in the beginning there is rapid progress in the acquisition of the new skill, this is followed by a period in

which no improvement is visible, this is again followed by a period of progress. The period of stagnation is usually called Plateau of Learning.

HOW DO PLATEAUS ARISE

—Plateaus in learning arise mainly due to two causes. First, after a few days practice in any mechanical type of ability, interest in

learning begins to slacken. The *monotony* of the task makes it boring. Secondly, Plateaus may represent a consolidation period in the progress of an individual. It may mean that the limit of progress with the particular co-ordination is reached and the individual *requires to make new co-ordinations* in order that improvement in learning may be seen. Taking the case of telegraphy, it is not a simple habit but a hierarchy of habits.

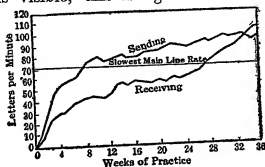


Fig. 2—Curves showing the improvement made in sending and receiving telegraphic message [Margon and Gillilan—*An Introduction to Psychology*]

The hierarchy in telegraphy may be arranged as letter habit, word habit and phrase habit—every one of the latter being based on the former. Thus word habit appears after letter habit has become consolidated. It is dependent upon and built upon the letter habit. Similarly the phrase habit is dependent upon the letter habit. Now before some amount of letter habit is obtained it is impossible to get to the next rung of the ladder. The student who types a material by letters will certainly be slower than the one who types it paying attention to words. But unless he has ample practice with letters, his attentive consciousness will not be released to give itself to word units. We do alright the details of a task unconsciously only when the process has become firmly rooted through ample practice.

The curve of learning will always show improvement whenever the minor habit is being replaced by a more comprehensive one, that is, when new co-ordinations are being gained. Plateaus may not always mean stagnation. They may mean a *consolidation period* or a period of acquisition of new co-ordination. When these are gained there is uniform progress till the physiological limit is reached.

HOW TO OVERCOME PLATEAUS.—Plateaus arise due to boredom or diminution of interest and may be broken by *changing the method of attack*, by judiciously *distributing the period of work* and by introducing *new motivation*. There is always a great difference in the progress of learning when the motive is present and when it is absent.

We have always to find new motives to move pupils to intensified activity. From time to time the teacher has to make appeal to children's curiosity, pugnacity, play impulse or emulation. Boys of higher age have to be reminded of the gain they would make in completing a task.

EFFICIENCY IN LEARNING

Efficiency in learning depends on a number of conditions. We shall deal with them one by one.

INTENTION TO LEARN :—The most important factor in learning is the intention to learn. We have pointed above how with the addition of a motive the curve of learning suddenly rises and how with its dropping it falls. No lesson, however, methodically given will be so effective as a lesson learnt by the child himself while attempting to solve a problem. The Herbartian methods of teaching emphasised too much of formalism. But what is necessary

in teaching is motivisation of the process of Learning itself. There are some students who come with an attitude "Here I am, teach me if you can." No method will be effective in teaching such students. It is said, "One man may take a horse to water, but twenty will not make him drink." There must be the desire to learn; then knowledge will come speedily. Let there be the presence of some problem in the mind of the student, the greater the effort they make in finding out its solution, the better would be their learning.

It has been experimentally determined that there is hardly any learning where the desire to learn is absent. The writer once asked some students of I.A. class to take down some difficult words as a test in spelling. Seven words were given. Then the papers were taken. The students were then asked to write all the words in the order they had written from memory. Out of 15 students, no student could remember the order, only one student could write six words from memory and some of them could not remember more than three words. Had they been told previously that their memory was being tested, they would have surely fared much better. In a similar experiment cited by Morgan and Gililand the number of students was 236, and the words given were 6. Only 12 students or 5% could give all the words in the correct order and 25% of the students could give the words but not the order.

LEARNING BY DOING :—Learning occurs mainly in response to a situation. Hence learning is possible only when it is accompanied by doing. Doing is learning. What we do modifies the nervous system in such a way that it facilitates doing the same thing a second time. Hence the teacher should not do too much of spoon-feeding to the child. He should allure the child to exert himself and tackle with the problem. Where the child receives all help in solving his problems from the teacher or the

elders he learns little. The child who asks his elders or another child to solve his arithmetical problems or copies them out from the more intelligent ones of his class-fellows, acquires the ability to simply copy out. He would be at his wits end when faced with a difficult situation.

When the child makes an exertion and manipulates a situation in different ways, he becomes acquainted with the situation thoroughly. By solving one problem in this way, the child acquires the ability to solve a hundred other similar problems. The false moves that he makes are very essential to make learning of lasting value. For these moves, being not accompanied with satisfaction will not be repeated a second time. The experience gained in exploring the possibility of the solution of the problem in hand, proves of very great value in acquainting the learner with new situations, besides giving him a training in the act of exploration. A student who takes down notes of a book he is reading is likely to remember its contents for a much longer time than one who merely reads the book. The process of analysis and synthesis, the shifting and sorting which is necessary to take down notes make the impressions deep in the mind of the learner. It makes his observation keen, strengthens the existing motives and increases interest in the work. The teacher should not make children passive listeners to what he says, he should always make them active. They should take down notes, come to the black board, answer questions, prepare charts, draw sketches. All this activity will help learning.

GOOD WORKING CONDITIONS —Learning is helped by good working conditions. Where distractions are too many learning becomes difficult. In the case of children particularly, who have little power of controlling attention, the distractions should not be allowed to appear. Noise coming from the street, excessive heat or cold, suffocating

rooms are not uncommon in schools. They have to be got rid of so that the boys may put forth their best in the actual work of learning.

VIGOROUS APPLICATION —It always pays to work vigorously. It is not good to develop among children the habit of taking up a book and sit with it. While the eye is rolling over the printed page, the mind goes wool-gathering. Working in such a way does not promote learning. It has been experimentally determined that a quick reader always gets more of the matter than a slow reader. Slow reading is very often dawdling away all the time. All the energy that the reader has at his command is not put forth. Hence we should promote among children the habit of measuring their own achievement in learning during a particular time. Let them develop the habit of learning under time control *

LENGTH OF THE WORKING PERIOD —The length of the working period should neither be too short nor too long. A certain amount of time is needed to get oneself heated to the work. Of course this will depend much upon the age of the learner, his habits of work and the nature of the task in hand. After one has become heated to work, work goes on vigorously for sometime, then fatigue gradually overtakes our limbs and the brain. There is loss of efficiency when there is prolongation of work beyond a certain period. Attention flags. It is best to stop or change the work under such conditions.

In the case of young children the working period should be comparatively shorter than the one for older boys. There should not be the same time table for boys of all ages and classes. Between two periods, there should be a few minutes gap to make the boys refreshed.

* Sandiford : *Educational Psychology* P. 173.

FATIGUE IN LEARNING

When learning is continued beyond a certain period fatigue ensues. Fatigue may be bodily or mental; it may be muscular or brain fatigue. The muscular fatigue is brought more readily by mechanical type of work, whereas intellectual work brings brain fatigue. The one kind of fatigue, however, does a great deal to bring the other kind of fatigue also. Particularly bodily fatigue, which usually comes first, affects the mind and brings mental fatigue.

CAUSES OF FATIGUE.—Fatigue is caused by three factors :—

- ✓(i) The exhaustion of the energy producing compounds.
- ✓(ii) The presence of toxic waste products
- ✓(iii) Lack of oxygen

There are certain compounds that energise the cell-bodies of the neurones. When the stimulation of the muscles and neurones is prolonged, the compounds are exhausted and fatigue ensues. Unless there is the replenishing of the spent up store through rest nourishment and sleep the muscles and nervous fibres would not work.

Toxins or waste products which are formed due to the exercise of any muscle also cause fatigue. These toxins are poisonous and their presence in the blood causes fatigue. If they are somehow removed, fatigue for the time being disappears. They are removed mainly through rapid circulation of blood. Hence a period of rest is needed after muscular work, to remove fatigue. Children get themselves refreshed during the recess that is provided after doing some hours of brain work. Their walking

about in the open, running and playing increases the rapid circulation of blood with the result that toxins are removed and fatigue caused by the work vanishes.

Lack of oxygen also causes fatigue. Oxygen is needed to help the work of the nerves and the muscles. It is also needed to oxidise the waste products. Hence when there is not enough supply of oxygen, the waste product is not readily oxidised and fatigue soon overtakes the organism.

REMEDY FOR FATIGUE.—The remedy for fatigue may be classified as follows —

1. Sleep.
2. Taking nourishment,
- 3 Change of work.
4. Introducing interest.
- 5 Forming habits of work

Sleep is the nature's sovereign remedy for fatigue. During the state of rest provided by sleep the toxins or waste products are removed, and new tissues are built up. The store of the energy-producing compounds is replenished. Hence after sound sleep a man gets up refreshed.

The taking of food also hastens recovery from fatigue. Tea and Coffee ward off fatigue for the time being. Food containing sugar is more helpful in replenishing energy than any other kind of food. The distribution of sprouting gram or milk is thus very valuable to children.

Change of work also removes fatigue especially of a local kind as is caused by school work. Napoleon used to say, change of work is rest. When certain centres of

the brain are active, in a particular kind of work, they are tired. If the activity is changed, other centres become active and the former ones get a period of rest. The greater the change in the nature of the occupation, the better would be the recovery. Hence in school it is best to alternate handwork with headwork. Arithmetic should be followed by dictation or drawing. The child when tired becomes inattentive. This is Nature's immediate remedy for fatigue. Inattentive simply means a change in the activity of the brain.

†) *Introducing interest* is by far the best remedy against mental fatigue. When a child attends to a subject or discourse for a long time, it becomes monotonous. All interest is killed. Unless something new is introduced continued work is not possible. New motives have to be added or new aspects of the problem have to be shown. The child may not have been actually tired but may have been tired of the subject in hand. We have to remember in this connection the fact that though muscular fatigue may ensue soon, as a result of hard application, nervous fatigue is very slow in coming. Very often when one complains of fatigue, it is not fatigue as such which is troubling the person, but his loss of interest in the work. In an experiment with Miss Arai, Thorndike found that even after twelve hours continual hard mental work there was little loss of efficiency in the performance of a mental task given to the subject. Where the interest is very great, the subject can work well even under the most depressing physical conditions such as improper ventilation, humid atmosphere or hot weather. This does not mean that such conditions should be allowed to be present at the time of learning of children, it simply emphasises the need of introducing interest in the lesson.

The fatigue in different school subjects have been measured and what are known as fatigue co-efficients

determined. According to Wagner, a German physiologist they are as follows :—

Mathematics (the standard)	.	100
Latin	.	91
Greek	90
Gymnastics	..	90
History and Geography	.	85
French and German	.	82
Natural History		80
Drawing and Religion	.	70

This study though valuable in itself does not give the whole truth. Much depends upon the interest of the learner in the subject and the method by which it is taught. As Sandiford puts it "It is probable that the way subjects are taught has more effect than the contents of the subject, some teachers being more fatiguing than others or at least more boring. And it should be remembered that boredom may be just as affective in reducing the out-put of the pupils as real fatigue."

Forming habits of sustained work also determines fatigue. In the beginning, when a person enters a mine, he feels soon tired, but hard work is possible after one has become habituated to the new adjustments. Habituation of the pupils therefore for prolonged work is very necessary to keep off fatigue. This comes gradually as the interest in the work increases and as a particular kind of work is done from day to day. What seems difficult and boring to the students in the beginning becomes quite pleasant after some practice. Thus habit is a great help to hard work. We shall turn to it in the next chapter.

CHAPTER XI

HABIT

WHAT IS HABIT.—The tendency of an organism to behave in the same way as it has behaved before is called habit. It is an exemplification of the Law of Inertia that operates in the physical world. James says "The phenomena of habit in living beings are due to the plasticity of the organic material of which their bodies are composed."* By plasticity is meant the possession of a structure weak enough to yield to an influence but strong enough not to yield all at once. Our nervous system grows to the moulds in which it is exercised before "A path once traversed by a nerve current might be expected to follow the law of most of the paths we know and to be scooped out and made more permeable than before"† The obstructions are broken and the path becomes 'a natural drainage channel.'

ITS RELATION WITH INSTINCTS —Habits are distinguished from instincts by the fact that whereas the former are tendencies that are acquired in the life of the individual, the latter are inborn. Sometimes instincts are spoken of as racial habits i.e. they are tendencies to action which a living being acquires from his parents and which are deeply ingrained in the race. "The habits," says James, "to which there is an innate tendency are called instincts." Both habits and instincts are tendencies to action or they are a part of our mental disposition, but whereas the former are acquired the latter are inherited. The following account given by Seashore of habits and instincts brings out clearly the mutual relations of the two.

**Principles of Psychology*, Vol. 1 P. 105.

†*Ibid* P.108

"The habitual act is like the instinctive act, but the two differ in their origin, one being perfected in the life time of the species, and the other in the life time of the individual. The infant comes into the world with his mind a *tabula rasa*, i.e., a blank, so far as knowledge or ideas are concerned. But he comes well equipped with organised systems of instinctive capacities, sensitive to stimuli, ready to "store up" experience, and to preserve it. Instincts being modifiable, the development of the individual takes the form of a progressive adaptation of the inborn capacities to fit them to the growing needs of the individual. In this process there is no leap or break: the transition from one step to the next is gradual and natural. Thus habit is instinct or reflex progressively adapted, enlarged and extended on the basis of individual experience"*

CHARACTERISTICS OF HABITUAL ACTION

Habitual actions have four chief characteristics, *Uniformity*, *Facility*, *Propensity*, and *Independence of attention*

UNIFORMITY.—Habitual actions are said to be uniform. Our manner of putting on the dress, walking, talking, making gestures, of rising early in the morning and going to the bed are all uniform. They occur, as it were mechanically, in the same way, as they happened before. We write the same kind of handwriting that we have been writing before and play our games in the same manner as was done before, when any action is repeated very often, it becomes habitual and gains machine like uniformity. Hence habits are sometimes called secondary automatic acts; the reflex, as well as instincts, being primary automatic. Just as in the case of a reflex act a stimulus is followed by a response in the uniform manner so in the

* *An Introduction to Psychology*, Chap. on Habit

case of a habitual act, the same stimulus brings the same response

But we must not push the analogy between the reflex act and a habitual action too further. Truly speaking no human activity is absolutely mechanical—certainly not the one which the individual acquires within his life time. Only dead matter can behave in an absolutely uniform manner. The behaviour of living organism shows some amount of variety and change.

Habit, as we have pointed above, is the nature's great mechanism for conserving energy. It simplifies movements required to achieve a given result, makes them more accurate and diminishes fatigue. How difficult it is in the beginning for a child to write a single letter, and how easy does it become later on for the scribe to fill pages. The hockey-player does not seem to attend to the ball at all. His movements are so swift and certain that he seems to be acting like a machine. Similarly the fingers of a trained player at piano work so automatically that they excite wonder in us. If at every time we did an act we were required to spend the same amount of energy, attention and effort, as we did at the first time, we would be able to accomplish little in life. The great achievements of human beings are made possible due to the fact that however difficult an operation may be in the first instance of its being undertaken it becomes extremely easy when it is repeated again and again. Conscious attention is no more required to perform these repeated acts. There is no effort of will either. When a child is learning to walk, to ride, to swim or to play he interrupts himself at every step by unnecessary movement, but when he becomes proficient in them the actions become automatic. A strictly voluntary act has to be guided by an idea or perception throughout its course. In a habitual act mere sensation is sufficient. The higher centres of the mind

are thus set free to do some other work. The fingers of the typist work machine-like, he can busy his mind with other thoughts than those of letters.

FACILITY—Another characteristic of a habitual act is facility “Habitual action goes straight to its mark with a minimum of wasted effort and energy.”* When we are attempting to cycle for the first time, we do it with so much difficulty that within a short time we get tired. Similarly what a great effort does a small boy make in writing the first few alphabets! But after some years of practice it becomes so easy a task that doing of it is not felt at all

PROPENSITY—Propensity is another characteristic of a habitual act. “We are prone to do,” says Stout, “what we are used to do.” Unconsciously we begin doing things which have become habitual to us. One who has the habit of rising early in the morning wakes up, as if it were, automatically at his usual time. Students who read till late at night do not get sleep if they happen to go to bed early. The drunkard feels an urge to go to the wine shop at a prescribed hour. We become hungry just when the fixed hour of the food comes. All this is due to propensity. People who have the habit of reading newspapers daily do not feel ease till they have seen the news of the day.

Similar is the case with the cinema goers, tennis players or visitors to certain clubs. Other things do not attract their attention. “Habits,” says Howard, “may be compared to well-worn-out channels along which our vital energy flows when released

INDEPENDENCE OF ATTENTION.—Habitual act takes place without much attention to it. Hence habit is said to be independent of attention. Most of the daily routine

* Gault and Howard's *General Psychology* p. 108.

of our work we do without giving attention to it. When one has become expert in cycling, he can go on talking with his friends or singing a song and yet cycle on in the proper manner. His attention is not required now to gain the balance or to paddle. He does these things automatically. Similarly the typist does not attend to the typing of the letters by the fingers, he attends to the matter he has to type and like a machine his fingers work.

But by this we must not understand that attention is not required for doing the work. Attention looks to the whole process. Its details are left over to habit, but when habit fails or a new situation arises, attentive consciousness intervenes. Thus for instance we might paddle on the cycle merrily so long as some obstacle in the way does not arise. But, as soon as we notice an obstacle we make new moves and these are deliberately and consciously done.

THE BASIS OF HABITUAL BEHAVIOUR

The formation of habits depends upon the plasticity of the nervous system. Neurologists explain it by the theory of synapses that are present in the nervous system. Between the ends of one neurone and the other there are junctions formed as a result of travelling of the nerve current. The formation of such a junction enables the nerve current to travel a second time much more easily. Initially the synapses offer the resistance to the passage of the nerve current. But when resistances are broken the nerve energy travels smoothly. Then the habitual act becomes an easy act. We may mark the three stages in the formation of a path which makes the habitual action possible. In the first place the desired connections between the different cells of the nerve are formed by chance. The nerve energy seeking to travel through some way forces

out a way for itself. If this chance connection is again and again used, the path becomes deep and it results in the formation of habit. But all the chance connections are not retained by the organism.

There is a process of selection exercised by consciousness, we might say, among the various possible paths and out of the many one that has the prospect of yielding greatest amount of satisfaction is preferred and the others are given up. Thus the principle of satisfaction works in the retention or selection of any nervous path. What begins as a chance occurrence or trial and error selection, is retained because of the satisfaction it yields. Further by repeated action or use the new path becomes deep and thus habit is formed.

THE IMPORTANCE OF HABIT IN LIFE

Living creatures, it is said, are nothing but bundles of habits. Habit is the great conservative force with which every individual is endowed. When we look at men its importance is obvious. Our manner of walking, dressing, eating, drinking, speech and behaviour with others are all matters of habit. By the age of twenty, our personal habits, such as, vocalisation, pronunciation, gestures, motion and address become fixed. "Habit is second nature. Habit is ten times nature," said the Duke of Wellington. How strong the force of habit in life is, has been illustrated by James by the story of a practical joker who seeing a discharged veteran carrying home his dinner suddenly called out, 'attention' whereupon the man instantly brought his hands down and lost his dinner in the gutter. Similarly he points out, riderless cavalry horses come together and go through the customary revolutions at the sound of bugle call; men grown old in prison have asked to be re-admitted after being once set

free. In a railway accident, says James, in America in 1884 a tiger had come out from a cage in charge of a circus party but it crept back to its old place again as if it was reluctant to enjoy its freedom.*

Habit is the basis of social order and moral discipline. "Habit," says William James, "is the enormous flywheel of society its most conservative agent. It alone keeps all within the bonds of ordinance, and saves the children of fortune from the envious uprising of the poor. It alone prevents the hardest and the most repulsive walks of life from being deserted by those brought up to tread therein. It keeps the fishermen and the dockhand at sea through the winter; it holds the miner in his darkness, and nails the countryman to his log cabin and his lonely farm through all the months of snow, it protects us from the invasion by the natives of the desert and the frozen zone. It dooms us all to fight the battle of life upon the lines of our nurture or our early choice, and to make the best of the pursuit that disagree, because there is no other for which we are fitted, and it is too late to begin again. It keeps different social strata from mixing. Already at the age of twenty-five you see the professional mannerism settling down on the young commercial traveller, on the young doctor, on the young minister, on the young councillor-at-law... It is well for the world that in most of us, by the age of thirty, the character has set like plaster, and will never soften again"†

* When the Romans, who ruled over Britain for nearly five centuries had to leave it, to defend their own homes against the invasion of Goths and Huns, the old Britons sent a petition to their masters called "the Groans of the Britons" to come back and defend them against the attacks of the barbarians—the Angels, Saxons and the Jutes from the South and the Picts and the Scots from the North. *A nation that lives for long under the sway of another nation loses both the ability and the desire to defend its freedom.* Abilities and virtues that are not practised for long die of disuse.

† James: *Principles of Psychology*, Vol. I P. 121.

ITS IMPORTANCE TO EDUCATION.—The progress of an individual in life depends upon the formation of good habits. The child with good habits has an enormous fund of energy at his command which he can utilise for the purpose of improving himself. A man should have fixed hours of rising and going to bed, of meals, of work, recreation, rest and social intercourse. It is only in this way that he can discharge all the heavy responsibilities of life that fall to his lot. "There is no more miserable human being than one in whom nothing is habitual but indecision, and for whom the lighting of every cigar, the drinking of every cup, the time of rising and going to bed every day, and the beginning of every bit of work are subjects of express volitional deliberation"* Rousseau gave a false pedagogical doctrine to the world when he said that the only habit that Emile would form is to form no habit. The child cannot help forming habits. It is up to us to see whether the habits he forms would be good or bad.

We should make the nervous system of the child his ally rather than his enemy. 'The hell to be endured hereafter is no worse than the hell we make for ourselves by fashioning our character in the wrong way.' Nothing we ever do is wiped off. The child's life is in the most plastic period. His mind is impressionable to everything that occurs in the environment, hence great care is to be taken in directing his inclinations and enabling him to react to the situations around him in the proper way. The child who has not acquired the habits of cleanliness, punctuality and industry will seldom develop these in later life.

*James.—*Principles of Psychology* Vol. I, P 122,

LAWS OF FORMING HABITS.

William James has enunciated four laws of the formation of habits.—

(1) *Launch yourself with as decided an initiative as possible.* Take a public pledge if possible. The greater the strength of resolution with which we begin a work, the longer is it likely to keep us engaged with it. Well begun, it is said, is half done, so when the first act is done with a strong resolution the impressions that it creates in the mind become deeply ingrained and so when the action is repeated it is done with ease. Sometimes taking a public pledge enables oneself to stick to one's resolution with greater tenacity.

(2) *Never suffer an exception to occur till the new habit is securely rooted in life.* Failure at the outset damps energy. Each lapse is like letting a ball of string which one is carefully winding up. A single slip undoes more than a great many turns will wind again. A man who is a habitual late riser makes up a resolution to rise early; he rises early for five or six days but after a week on one day he becomes indulgent and rises late. This action of his practically undoes the virtue that he gained by making an effort for seven days.

(3) *Seize every first possible opportunity to act on every resolution you make,* and on every emotional prompting you may experience in the direction of the habits you aspire to gain. A man may possess a vast number of good maxims; but if he does not act up to them, his knowledge of those maxims is not only useless to him but is positively harmful. It is by actions alone that character is formed and man is made great. Character, says J. S. Mill, is a completely fashioned will. The more often do we do a right act, the more deeply does the tendency to do so become ingrained in our mind. On the other hand, every time a good resolve,

a fine glow of feeling is lost without bearing fruit, it works on the side of pulling one down. "There is no more contemptible type of human character than that of the nervous sentimentalist or the dreamer who spends his time in weltering sea of sensibility but never does a manly concrete deed."* Persons who read novels too much and visit cinema houses and theatres develop a type of character full of sentiment but possessing little capacity for doing social good. They become the type of the Russian lady who wept over fictitious personages in the play while her own coachman outside froze to death.

(4) *Keep the faculty of effort alive in you by a little gratuitous exercise every day* Just as by disuse living beings lose the power of exercising certain of their limbs, so too virtues when they are not constantly exercised are lost from character. It was a very wise and psychological truth uttered by Aristotle when he said, that there is no holiday for virtue. Virtue lies in activity and not in capacity. Baden Powell hit upon this truth and so he laid down the law for the scouts—A scout must do a good turn every day.

HOW TO FORM HABITS IN A CHILD.

The four laws of habit formation of William James, explained above, are to be borne in mind by the teacher. The teacher is entrusted with the task of moulding the character of his pupils. And the principles underlying the formation of habits will help him in his work. If a teacher wants a good habit, as for example, the habit of cleanliness, or punctuality, to be formed in his students, let him lecture on the benefits that accrue from these virtues. Let him tell stories to his students about the misery in which unpunctual men fall, let the impression be made vivid through lantern slides. When the intellect has

*James: *Principles of Psychology* Vol. I, P. 122.

been sufficiently enlightened and the interest in the cultivation of the virtue is created, the students should be asked to take public pledge to cultivate the said virtue.

The teacher must not allow the students to keep waiting for a long time in putting the pledge to practice, or else the situation arises when big resolves are made by students resulting in nothing

Bhulen, a character depicted by a Bengali poet takes an oath that he would serve his country and sacrifice everything for its sake, but when the actual opportunity arises he shirks it, excusing himself by the thought that he is meant to do something very great. This in fact creates only self-deception or weakness of the will. The first act always requires a great effort to be done, and the child has to be goaded on to do it. For this there should be ample motivization but actual practice alone breaks those resistances which are initially present due to inertia.

Once this inertia is broken, there are chances of success in the endeavour of implanting a good habit. Now what is necessary is to apply the principle of use to the formation of habit. James' first, second, third, and fourth law are various applications of this principle of use. Practice, it is said, makes a man perfect. Hence the teacher has to see that the student is making his habit firm by constant practice. He will at times require fresh motivization and this has to be done by the teacher. Any good habit, however firmly implanted, will change, if motives do not exist for its retention.

References —

1. James : *Principles of Psychology*, Chap. VI.
2. Gault & Howard : *An Outline of General Psychology*, Chap VIII.
3. Woodworth : *Psychology*, Chap. XIII.

CHAPTER XII

ATTENTION ✓

In all the process of learning and habit formation attentive consciousness plays a very important part. The child cannot learn or acquire new adaptations so long as its attention is unsteady or flickering. Hence we have to ask ourselves the question.—What is attention ?

NATURE OF ATTENTION:—Attention is sometimes defined as “a focussing of consciousness on an idea or object of thought.” The process of attention, therefore, consists in getting an object of thought clearly before the mind. In the words of Titchner, “The problem of attention centres in the fact of sensible clearness.” This view has been maintained by Bumpville who says, “It is the concentration of consciousness upon one object rather than upon another. It is the essential element in all creative activities.” Our mental life is a stream of consciousness, some feature of this stream at one time is more predominant than others. Out of a number of facts that are present in our normal state of consciousness some are more vivid, others are dim. Those that are vivid are said to be at the focus of consciousness, those that are less vivid are said to be at the margin.

In an actual state of consciousness the facts or the objects at the centre of consciousness and at the margin frequently alternate places. When an object at the margin comes to the focus of consciousness those connected with it stand at the margin ready to come at the focus whenever required. Every object is related to a number of other objects and never stands

isolated by itself. An object is only an item in a total state of consciousness which consists of many items. For example, if we are looking at a bowler in the play of cricket, the bowler is at the focus of our consciousness and the rest of the players and the articles of the play remain at the margin. Supposing all of a sudden we are called upon to attend to a fight in the street, then the bowler will go at the margin of consciousness and most of the things connected with him will vanish, while those that are connected with the fight in the street will come to the margin, the actual persons involved in the fight being at the focus. When we again begin attending to the activities of the bowler, another field will appear before the mind forthwith.

The above account of the process of attention seems to be some what mechanical. But the attentive activity is selective and has a purpose behind it. "Attention," says "McDougall" is merely conation or striving, considered from the point of view of its effects on cognitive process.* The stronger the conation, the more intense is the attention. Stout defines attention as "Conation determining cognition." It is essentially a conative attitude of the mind.

All cognition is purposive, so is attention which determines it. The mother may be insensible to the great noise going on outside but she easily hears the cries of her babe. It is the awakening of the parental instinct that makes it possible. The experiment of Itard with a wild boy of Aveyron proves this point, "His ear of all his senses," says Itard, "was the one which appeared the least sensitive. It was, however, noticed the sound of a nut or of any other eatable thing which he liked never failed to make him turn round. The observation was unmistakable and yet the same organ was insensitive to the loudest noises and even

* *An Out-line of Psychology* P 271.

to the explosion of fire arms.”* Deaf people become quick in hearing when something is talked of them. Things of interest are remembered well. They are also attended to well. This is the general law. Attention is determined by the conative-affective mental structure. This conative-affective structure is called interest.

CHARACTERISTICS OF ATTENTION

There are certain marked characteristics of the attentive process—some can be known only introspectively, whereas others can be observed outwardly.

SELECTIVENESS OF ATTENTION :—Attention is selective. Attention is defined as focussing of consciousness on an idea or object of thought. This definition implies selection as a marked feature of the activity of attentive consciousness. Selection, as Gault and Howard point out, lies at the very heart of consciousness. “To be conscious is to discriminate to note this rather than that, to decide, to prefer—in a word, to select”†
 (When we attend to an object we are analysing the various features of it, now attending more to this aspect now to that. In a way the whole object is constructed by the process of attention itself. Thus the attentive process is not only *analytic* and *selective* but *creative* also. The object is created in the manner it is attended to.

SHIFTING NATURE OF ATTENTION :—Attention is constantly shifting from one object to another. It cannot remain fixed to one point for more than seven or eight seconds. Even while we are attending to the same object for a long time, it is really changing. Attention shifts from one aspect to another quickly

* Dumville. *Fundamentals of Psychology* P. 236

† *An Outline of General Psychology* P. 105.

and when all the aspects of the object have become quite familiar we cannot any longer fix attention to it. While we are reading a book we seem to be attending to the same object for a long time. But really there is succession of different ideas and impressions in our minds. The object of attention in a word is constantly changing *

From the above it follows that "control of attention is not keeping it from shifting but directing its shifting. It will shift, but the next thing to which it will shift can be controlled."†

NARROW RANGE :—Attention at any moment is limited to a narrow range. This follows from the first characteristic of attentive, namely, that it is selective. We cannot at the same time attend to two unrelated objects. If they have essentially different characters attention to one will drive out the other from the field of attention. We cannot mourn and rejoice at the same time, we cannot pray to God and joke with our friends at the same time. But we can attend to many things if they are related to each other, that is, if we can form a meaningful combination of them. This again depends on our apperceptive power. Hence the range of attention will be different for different persons according to the culture of their minds. What are isolated facts to one mind may be connected facts to another.

INCREASE OF CLEARNESS OF THE STIMULUS :—Through the process of attention the details of an object are known

* Some very easy experiments are suggested by Morgan and Gihland to demonstrate to ourselves the shifting nature of attention. 'Make a dot on a piece of paper and move away from the paper to a distance so great that the dot will be safely visible. Look fixedly at the dot from this distance and it will be noticed that the dot seems to come and go. Hold a watch at such distance that its ticking is securely audible. As you listen you will observe that the ticks get louder and then seem to disappear altogether.' *An Introduction to Psychology* p. 131.

† *Ibid.* p. 132.

better. The significance of the stimulus is better interpreted as the mind becomes active and past experiences are revived. Attention would fail of its main purpose if this result were not achieved. Attention always aims at increase of knowledge.

MOTOR ADJUSTMENTS.—Attention affects motor adjustments. Gault and Howard call these the outward marks of attention. Carlyle in one of his essays in *Heroes and Heroworship* explains the term attention as at—tention=reaching to. Craned necks of the audience can be observed whenever they are listening to an interesting discourse. The sense organs are properly adjusted to receive the stimulus. Control is placed on other adjustments than those required for the particular stimulus. There is rigid resistance towards irrelevant stimuli. When a boy is absorbed in his game no bodily injury which he might have received during the play attracts his attention. No pain is felt. It is only when the game is over that he becomes conscious of his wound.

CONDITIONS OF ATTENTION

There are *subjective* and *objective* conditions of attention. Among the objective conditions are specially loud noise, dazzling light, sudden appearance of an object or anything that affects our senses too acutely. The subjective condition is the mental structure inherited by the organism. This determines our interest in the thing outside. Ultimately the subjective and objective conditions cannot be classed separately. They are intimately related with each other. Whenever our attention is forced towards a startling object, the self-preservatory activity is set afoot in the interest of the organism. An outside thing attracts attention because it is in some way related to one's inner needs. Thus we see that interest is the fundamental condition of attention, and in the study of

interest therefore lies the key to the main problems of the education of the child

MEANING OF INTEREST —Interest according to Driver, “is disposition in its dynamic aspect.” McDougall says, “Interest is latent attention and attention is interest in action”* It is the conative-affective disposition determining the cognitive process or attention. Interest in one sense means the object of interest, this is the sense in the statement—“These are my interests.” In another sense, it indicates the process, as in the statement—“He is looking at it with interest”—thus describing the nature of man’s activity. In a third sense it is used for an enduring structure of the mind. When we use the expression he has great interest in games, it is the structure that is referred to. Hence interest is rightly called latent attention.

SOURCES OF INTEREST :—The sources of interest are *instincts* and *sentiments*. We are directly interested in those objects which are connected with our innate dispositions, whereas the objects that are connected with our sentiments become our “derived interests.” Derived interests are sometimes as powerful as “direct interests.” It is the task of the educator to direct the force that is attached to the native interests to the derived ones. The things which are constantly attended to, not because they are interesting in themselves but because they are connected with those that are interesting in themselves, become in the end as interesting as those connected with direct interests. This is how the *apperceptive mass* is created. The apperceiving power of an individual determines his attention as much as his instincts and innate tendencies do. Through the creation of suitable apperceptive masses the great educationist Herbart wanted to culture the interests of the educand and thus to

*Mc Dougall : *An Outline of Psychology* P. 277.

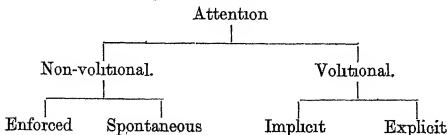
elevate his character. The apperceptive mass in itself is a force that determines both interest in any object and our readiness to attend to it.

Apperception is a constructive activity of the mind. It requires that the object presented must have points of familiarity as well as newness. Curiosity and the creative impulse supply the motive power for apperception. Hence in the actual process of teaching, to secure proper attention the teacher has to see whether the matter is being properly apperceived and it can be done so only if it has both the elements of newness and of old.

HIGHER AND LOWER FORMS OF ATTENTION.—Attention to one object to the neglect of others is not necessarily a higher form of attention. In a sense it is the lowest form. The highest form of mental activity requires that a class of objects should be perceived together and their general aspects be abstracted. The highest kind of mental activity is abstraction or forming of concepts. It requires attention to many objects at a time. So attention as an activity may be graded in a hierarchy of mental processes—perception, observation, judgment and reasoning. Apperception involves the highest form of mental activity, hence it is possible only in the highest type of attention.

CLASSIFICATION OF ATTENTION

There are various ways in which attention is classified. A classification is given below —



Non-volitional attention is that, in which an effort of will to attend to an object is not required. In the case of *enforced* attention, we attend to an object due to the stimulation of sense organs or obtrusiveness of sense impressions whereas *spontaneous* attention is due to the excitation of natural interests, acquired dispositions or sentiments. *Volitional* attention is due to an effort of will. When a single effort of will is required, attention is called *implicitly volitional* whereas when more than one efforts of will is required attention is *explicitly volitional*.

An example will make the terms clear. A student is reading attentively a book on civics, because he has to appear in an examination which requires a thorough knowledge of the book. He has no liking for the subject as such, but he has to study it as he wants to pass the examination. Hence though he would rather like to do other things, he concentrates his attention on the reading of the book. Now his attention can be characterised as volitional. There is an effort of will required to keep one engaged in the work. If the student having made up his mind once keeps on doing the work smoothly, his attentive process would be called implicitly volitional, but if his mind wavers, and he has to make several efforts to bring it to the task in hand the process will be called explicitly volitional.

Now, supposing in the course of his study he hears a noise outside and is drawn to it, simply because the noise is very intense or obtrusive, the attention is non-volitional and enforced. But supposing his friend calls him from outside his room and he is so delighted by the presence of this friend that he altogether forgets the subject he was studying, the attention to his friend or his talk will be called spontaneous non-volitional attention.

For educating the will or character it is the volitional attention (explicit or implicit) that has to be made use of

The sentiment of self-regard has to be appealed to. For teaching children, however, the teacher should make as little use of volitional attention as possible. He should invoke the aid of innate and acquired dispositions

ATTENTION AND INTEREST.

HOW TO MAKE A LESSON INTERESTING.—In the problem of securing attention of the child to the lesson in hand lies the whole problem of education. The child can attend to only what is interesting. The child's interests vary at different stages. The teacher has to study them. Then there are the primitive springs of action—the instincts and the innate tendencies. To begin with, the teacher has to work in line with them till a system of apperceptive or acquired interests is built up in the child. Nothing should be presented to the child for which there is no preparedness in his mind to receive. What is unfamiliar to the class can never interest it, even as what is well known to them will not hold their attention. The abstract topic is to be illustrated by concrete examples, the unfamiliar has to be related to the known. Weave a story about the topic, point to certain personal gains that may accrue through mastering it. "Above all things, make sure that it shall run through certain inner changes, since no unvarying object can possibly hold the mental field for long. Let your pupil wander from one aspect to another of your subject, if you do not wish him to wander from it altogether to something else, *variety in unity being the secret of all interesting talk and thought*"*. In a word, we have to keep active the curiosity of the child, to appeal to his personal interests or the sentiment of self-regard, and control the shifts of attention so that it may not be continually shifting.

*James: *Talks to Teachers* p. 112.

DIFFERENCE BETWEEN AMUSING AND INTERESTING — Teaching in order that it may be effective must be interesting. This does not mean that it should be amusing; for interest, as we now understand it, is that which supplies the motive power to all kinds of work and determines attention. Interest may originate from the innate dispositions or from sentiments, the highest of which is the sentiment of self-regard. When the sentiment of self-regard is appealed to, the type of attention which ensues is usually called volitional attention, that is to say, the individual has to attend to a thing because not doing so will be against his self-respect. Interest may be either direct or derived. The type of attention called volitional, requires derived interest. The object in itself may not be interesting but it has to be attended to, so that an aim which is related to some mental dispositions may be achieved. Thus attending to a railway time-table is not interesting in itself but becomes so when it is consulted for an end whose achievement is necessary for satisfying some one of our cravings.

So the doctrine of interest simply means that the material of instruction should be so communicated that it becomes related to the already existing dispositions in the mind of the child. The teacher has to appeal to his instinct of curiosity, of play, of emulation or of pugnacity. He has also to appeal to his sentiments, including the sentiment of self-regard. Thus in solving problems of mathematics the teacher cannot all the time depend on direct interest. He has to stimulate pugnacity or the sentiment of self-regard.

In the case of younger children the teacher has to bring into his lesson as many objects as possible that are directly interesting. He should appeal to their native curiosity or constructiveness. Thus in a geography lesson he has to bring in ample illustrations and to make the

children draw maps and sketches. In the case of students of higher class, however, he has to rely more on derived interest. In his anxiety to make the lesson interesting, he is not to play the clown or begin telling stories irrelevant to the subject in hand.

It should, however, be borne in mind that as little appeal to volitional attention be made in course of a lesson as possible, for every effort of will requires an expenditure of energy and we cannot draw upon the child's resources *ad infinitum*. Soon fatigue will overtake the child and then it will become impossible for him to attend.

It is in the sense explained above that Herbart used the word interest when he propounded his famous doctrine of interest as an essential element in the formation of character. The character of a man depends on the circle of thought and these depend on his interests. The apperceptive masses formed by proper education and instruction are the sources of interest and it is these that result in noble activities. The interests are acquired by a proper education of the will.

THE DOCTRINE OF SOFT PEDAGOGICS —From what is said above it is evident that a teacher should not avoid making children work hard or concentrate their attention on what is abstract or difficult. They have to put forth effort in order that they may make progress in learning. What is merely amusing hardly benefits the child intellectually. To be always appealing to the native impulses of the child cannot be called education; it is its negation. The doctrine of soft pedagogics is both ethically and psychologically unsound. It is ethically unsound, for it is the essence of a moral act that it is not in line with one's impulses but usually against them. It is also psychologically unsound in as much as the evolution of the mind consists in attaining higher and higher degrees of

coordination between the various conations and in establishing a control over them by the self. This means a greater synthesis of ideas and sub-ordination of the impulses to reason. If all the time the teacher is catering to the whims of the child, if he is too often appealing to animal curiosity, pugnacity or other instincts, a strong well organised personality is not likely to develop. Thus teaching geography through magic lanterns is thought by many educational thinkers as a questionable device of communicating useful knowledge about geographical phenomena. In the absence of hard intellectual thinking no teaching is sound. The child has to be gradually raised from the animal nature to rationality. This means that though the teacher has to start with the natural impulses, he must soon take help from the derived interests of the child. He is gradually to be trained to master attention. This can be done only by an effort of will.

Lest it should be understood that we are over-emphasizing the necessity of making the child attend to the dull and the uninteresting we may state once again that the teacher has not unnecessarily to make the lesson difficult so that his faculty of attention may be trained. That is an old exploded theory. We no more improve our power of attention by attending to what is dull, than we improve memory by memorising long columns of figures or improve physique by standing on our heads. All are difficult tasks, but every difficult task does not necessarily improve our mind or body. The advice of William James in this connection deserves to be borne well in mind by every teacher.

"It is certain that most school room work, till it has become habitual and automatic, is repulsive, and cannot be done without voluntarily jerking back the attention to it every now and then. This is inevitable, let the teacher do what he will. It follows from the inherent nature of

the subjects and the learning mind. The repulsive process of verbal memorising, of discovering steps of mathematical identity, and the like, must borrow their interest at first from purely external sources, mainly from personal interests with which success in mastering is associated, such as gaining of rank, avoiding punishment, not being beaten by a difficulty and the like. Without such borrowed interest the child cannot attend to them at all. But in these processes what becomes interesting enough to be attended to is not thereby attended to without effort. *The teacher, therefore, need never concern himself about inventing occasions where effort must be called into play*"

SPAN OF ATTENTION —Experiments have been made to find out as to how many objects an individual can attend to at the same time. The span of attention with regard to vision is measured by an instrument called tachistoscope. A number of dots are presented and the number observed at a glance by the subject is noted. The maximum number of dots observed at a glance is usually six but more dots may be observed, if they are arranged in some order. The increase is due to memory. Auditory span is measured by metronome. Experiments have shown that the number of sounds that one can hear at a time is eight.

The significance of Span of Attention The experiments on span of attention do not prove that we can attend to many things at the same time. It would go against the fact of the unity of consciousness essential for the process of attention. At any time we can be aware of only one thing. Hence what these experiments measure is our power of remembering the different units once seen. The dots when seen or the sounds when heard were known as a unity. The object of attention, that is to say, was one. The different aspects of the objects were distinguished

*James : *Talk to Teachers* P. 100.

later on by calling back the object to the mind and distinguishing the parts. When the number of dots increase, the object becomes a complicated one and cannot be recalled just as it was. Hence we fail to tell the exact number. We can count the dots on a card easily up to six, but if they are put in groups of two or three we can count up to 12 or 15 at a single exposure.

4. DISTRIBUTION OF ATTENTION —Every one of us is capable of distributing his attention to two or more tasks. While I was writing the above sentence my mind was engaged with what I have to write next. I was also aware that some noise was going on outside. This awareness also requires an act of attention. How are these three things attended to at the same time? There are two explanations of the phenomena. In the first place the three objects of attention may be forming a unity. This unity is determined by the purpose in hand. The object of attention is seldom one in the sense of an abstract one. It is always a one in the many. The purpose determines as to what shall be called one by any individual. Hence two objects which look absolutely unrelated to each other to one man may be quite related as they appear to the consciousness of another. Hence the former may be incapable of attending to them together whereas the latter can. A child therefore cannot attend to as many objects as an adult can do, for his mind cannot discover any link to bind them together. The greater the development of the mind, the larger would be the number of objects a person can attend to at the same time. The organisation among his purposes, the richness of the apperceptive mass, enable him to discover such meaning and connections among the seemingly separate objects that they can be reduced to a unity. Thus it was possible for Caesar or Napoleon to dictate orders to several secretaries pertaining to different subjects at the same time.

There is, however, another reason why we can attend to more than one object "An impulse," as McDougall points out, "once set to work towards a goal continues in some degree to operate after we cease to think of the goal or the means towards it. That is to say, *conation outlasts the cognition which initiates it.*"* In the case of writing a sentence, attention to many acts is not given at same time. When the new sentence was to be begun the sentence was at the focus of consciousness and the whole of attention was engaged in it. But once begun habit takes care as to the act of writing, the attentive consciousness proceeds on "Our attention oscillates between the two tasks, and in the internals in which it is directed to the one our executive organs continue to carry out the movements appropriate to another."†

Thus we see that when we are attending to many unconnected tasks, we do it through the strength of our conation and formation of habits. But in all such cases there is much strain required as the attentive consciousness has to alternate between two tasks if they are really unconnected. Usually efficiency or speed suffers. Hence while dealing with children we must bear the golden rule in mind—"Do one thing at a time." Tasks given to children should be simplified and given in a way that they may attend to only one thing at a time.

TYPES OF ATTENTION —There are some people who have *distributive* attention; there are others whose attention is *intense*. Those children who have the intense type of attention are good for mathematics. Distributive sort of attention is useful for practical work. Girls usually have distributive type of attention and hence they are good in practical work but complain of lessons in mathematics.

* McDougall. *An Outline of Psychology* P. 280.

† Ibid. P. 283.

In choosing people for vocational work this fact is to be borne in mind. Those who have intense attention are good scholars. Those who have distributive attention are good administrators.

Then attention has sometimes been recognised as either *fluctuating* or *fixating*. Children have fluctuating attention whereas advanced students and thinkers have fixating attention. Fluctuation in attention may also be due to lack of energy. Fixations sometimes are due to abnormality, that is, due to hidden complexes seeking to find expression.

INATTENTION

Inattention is due to lack of interest, fatigue or the presence of a distraction. A distraction is defined by Woodworth as "a stimulus that attracts attention away from the thing to which we mean to attend." Out of the several stimuli that visit our mind, we attend to that in which we are most interested. But the mere intensity of the stimulus may force us to attend to it in spite of our will. Such a stimulus is called a distraction. Usually a distraction destroys the efficacy of attention. While teaching children distraction should be kept away from their minds. Loud noise going on, music band being played outside the class room, are not happy conditions for the concentration of attention of young children. Schools that are situated in the interior of the city and have no compound walls are not proper places for the education of children. When boys have to fight distractions, the mind is likely to be overtaken by fatigue sooner. Hence securing of the absence of distractions, while the boys are engaged in their work, is of prime importance to the educator.

We must, however, bear in mind the fact that what is a distraction to one mind may not be a distraction to another.

The accountant working in a factory of hardware is not disturbed by the noise going on about him. The classical instance pointed out by Stout, is that of the miller who at length fails to have any distinct awareness of the clatter of the mill which he is continually hearing, although he notices at once its cessation or any marked change in it. What becomes habitual does not distract attention. The newness of any stimulus distracts attention. The regular whistles of the waterworks, the tinging of the bells from a near temple, the familiar motor horn will not be minded but a squeak of a child outside will catch the ear of all children in the class.

We should not suppose that distractions always destroy the efficiency of work. At times they increase its efficiency. Many laboratory experiments have been made on the effect of distractions. The subject is put to work such as adding or type-writing, and works for a time in quiet, after which disturbances are introduced. A bell rings, a phonograph record is played, other noises are introduced, with the curious result that the subject only momentarily attracted accomplishes more work rather than less. The distraction has acted as a stimulus to greater effort, and by this effort the distraction is overcome.

We cannot secure a total absence of distractions. The presence of distractions to which boys have become used is really an aid to concentration of attention. The editor of a newspaper edits the news best while a busy hum of the press, the clatter of the typist, is going about him. A boy cannot concentrate his attention so well while alone as he can do in the class. To be too sensitive to distractions shows an abnormal state of mind. In the "maniac state" or "mania," the patient is excessively distractable. He commences to tell you something, all interest in what he has to say, but if you pull out your watch while he is talking, he drops his story in the middle of the sentence and shifts to some remark about the watch.

We should help children to conquer distractions. As a matter of fact training in attention, in a sense, is nothing but conquering distractions. Distractions cannot be overcome by directly fighting them. A conscious effort to ward off distractions keeps them in the fore-ground of consciousness. "To overcome a distraction you have either to sidetrack it or couple it with the main task." Thus a teacher can fight distractions to the attention of the boys only by making his lesson more interesting.

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1. Dumvile—*Fundamentals of Psychology*.
2. Stout—*Manual of Psychology*.
3. McDougall—*An Outline of Psychology*, Chap. IX.
4. James—*Talks to Teachers*, Chap. X.
5. Gault and Howard—*An Outline of General Psychology*, Chap. V.

CHAPTER XIII.

SENSE PERCEPTION.

IMPORTANCE OF THE STUDY :—Sense perception is one of the first products of the process of attention. Attention is defined above as “conation determining cognition.” It is an activity of the mind resulting in knowledge. The most elementary form of knowledge that we can have is sense perception. It is the material, out of which through a further process of attention, other forms of knowledge such as memory, imagination, conception, judgment and reasoning develop. Hence to understand the nature of the process which gives rise to perceptual experience is very important to the educator

DISTINCTION BETWEEN SENSATION AND PERCEPTION :—It is customary to distinguish sensations from perceptions. Sensations are said to be the stuff out of which perceptions are made. Sensations may be received passively, but perceptions require the analysing, selective and synthetic activity of the attentive consciousness. It is due to this activity that meaning is introduced in any sense experience making it a percept.

THEIR MUTUAL RELATIONSHIP :—We have combined here the two concepts, sensation and perception into one phrase “sense perception” but, for the purpose of education, we need not study one in abstraction from the other. Sensations in the abstract are never experienced by us, nor are they experienced so by the child. In General Psychology they are treated separately to have an orderly development of the subject. To a certain extent, we too shall do it, but we want to avoid the misconception that the child has first sensations then perceptions. The

child's 'knowledge is always a complex one. Except in the case of a newly born babe, the child always deals with percepts. What goes by the name of "Sense-training" is really a training in perception. Perception is sensation plus meaning. Hence any awareness in which the meaning is introduced is perception. The child is not trained to know the meaningless things, but things full of meaning. Then, sensations are passively received, while in perception we are active. The educator is not concerned with the mass of impressions impugning itself upon the sense organs of the child but with introducing order in them, selecting and arranging them and enabling the child to distinguish them properly.

SENSATION

CHILD'S ELEMENTARY AWARENESS —As the child is born, it has a vague and hazy awareness of the world about him. The world of the child, in the words of William James, is "a blooming buzzing something." The physiological mechanism that the child inherits makes possible this elementary awareness. There is nervous connection between the surface of the body, where the sense organs are located, and the brain. The afferent nerves going from the sense organs to the brain make the elementary awareness possible. This elementary awareness is called sensation. Thus in the case of the sense of vision, the rays pass through the cornea, through the lens, go up to retina. The excitation at this spot is carried by the afferent nerves to the cortex. This produces knowledge. Hence in the production of a sensation three agents are involved—the stimulus, the sensory nerves and the brain.

What happens in the case of the sense of sight happens in the case of other kinds of sense experience also. The world of complex reality is built out of this elementary awareness that the child gets through the excitation of

the sense organs The simple awareness is of a very undifferentiated kind—the different sensations are fused together

Gradually through a process of analysis and synthesis the child builds up its knowledge of reality The Atomic School of Psychology believed that the mind develops its complex knowledge through combining the different sensations into a unity Each sense experience or a simple idea, as Locke called it, is brought together with other simple ideas to build up a knowledge of objects According to William James it is a very perverse view The growth of the process of knowledge or experience is always from an undifferentiated incoherent mass to a differentiated and well organised system The newly born babe, in other words, in a sense, is aware of objects, even as we ourselves are But its awareness does not take the form of differentiated knowledge All is vague, hazy and unanalysed Hence it does not know the objects as objects but as mere mass of sense impressions The awareness of objects as differentiated elements of reality comes to the child through its interaction with the outer world The first object of the child is as James said, an 'obstacle'

DIFFERENT KINDS OF SENSATIONS—Psychologists distinguish eight different kinds of sensations—vision, hearing, skin, taste, smell, balance, movement, and organic sensations The skin sensations include different kinds of sensations—pressure, pain, warmth and cold. The visual and the auditory experiences are very important from the point of view of education We shall deal with them here

The sense of sight—Visual experiences are produced through the excitation of the rods and cones present at the retina The elementary visual experiences, however, are very different from what we, the adults, have We are capable of judging the distances of objects

through sight, the child has no such power. It is through the interpretation of our visual impressions that we judge distances. If a congenitally blind man were suddenly to gain sight, he will not be able to judge things as standing far and near. The same is the case with the baby. We shall come to this point again a little later.

The visual experience is of two kinds—brightness and colour. A six-months old child attains the capacity to distinguish brightness. Colour perception comes later and with age the power to distinguish colours increases. During the first year there is very rapid progress, then it becomes slow but goes on increasing till the age of sixteen.

Sense of hearing The experience of hearing is an outcome of the excitation of the auditory nerves situated at the ear, carrying excitation to the brain. The auditory experience may differ in quality or pitch, intensity, protensity or duration, extensity or volume. These distinctions are present in the visual experience also, but in sound they are better distinguished. Pitch depends on the number of vibrations that the auditory nerves receive per second. Sensations may differ in intensity. Of the two sounds of the same pitch, one may be louder than the other. Protensity depends on how long the sensation lasts. One sound or visual experience may last longer than the other. By extensity is meant the diffusion or “spreadoutness” of sensation. It depends on how much of the area of the body is affected by the sensory experience.

DEFECTS IN SENSE ORGANS

All the complex knowledge of the child is built up with the material supplied by the organs of sense. Any defect in the sense organs or in their proper use will therefore result in the child's acquiring defective knowledge of

reality. Most of the children are gifted by nature with all the above-mentioned senses. There are some, however, who are not so favoured and they consequently remain deprived of that element of knowledge of reality which could be gained through the particular sense they lack. Thus children born blind cannot have the knowledge of light or colours. The Poor Blind Boy consoles himself by saying :—

Let not what I cannot have,
The cheer of my mind destroy ;
Thus while I sing I am a king,
Though a poor blind boy.

It is true that education tries to do its little bit to enrich the life of even such unfortunate individuals. The blind can become literate through a special method. Helen Keller who was blind, deaf and dumb could yet be prodigy of learning. But education cannot compensate for all the natural defects of the child. Sometimes Nature herself compensates for these defects by making other organs more acute when a child has one of the organs defective. Thus it is said that the blind have their eyes on fingers.

The inborn natural defects of the child cannot be removed by education. But education has to see that the child does not acquire new defects due to the misuse of his sense organs. There are some defects of sense organs which the teacher ought to know. Early detection of them saves the child from many ills that might otherwise befall him.

DEFECTS OF THE EYE.—The percentage of defective eyes among school children is very large. Rusk compared the statistics of England, Russia, Japan and United States and came to the conclusion that from 10 to 30 per cent of the school children have defective eyes and require the use of the glasses. Some children are colour blind. About

four per cent among boys and one per cent among girls are colour blind. This defect, however, is congenital and cannot be removed.

Myopia or short-sightedness is the common defect that is to be found among children. It increases with age. The eye ball has too long a diameter so that the rays of light, instead of focussing on the retina, focuses in front of it. This can be corrected by using concave lenses.

Hypermetropia or far-sightedness is another defect. The eye ball is too short and so the rays focus behind the retina. In this case convex lenses have to be used.

Astigmatism is a third defect. It is due to uneven curvature of the cornea or the lens of the eye itself. The last two kinds of defects are generally not easily detected among children. This makes them suffer from much nervous strain.

The teacher should be on the watch for symptoms of eye defects. The child with defective vision strains while looking at the board, he brings the book too near while reading, complains of blurred print. He has sometimes headache, nausea or other forms of indigestion, neurasthenia and general emotional instability. The teacher should advise the parents to give proper glasses to all such children.

Some children contract defects of the eye through faulty methods of study. Bad postures, over-work, keeping books too near the eyes, straining the eyes with small print, writing small letters, too much knitting and needle work cause defects of vision and the teacher can prevent the children from acquiring all such defects by regulating the hours of work and by suggesting to them proper methods of study.

DEFECTS OF THE EAR —Some investigators have found that about 20 per cent of children have defects in one or both the ears. This defect is not so serious as the defect in the eye. The latter causes some disorder in the whole of the nervous system. But the defect of the ear since it deprives the child of so much knowledge that could be acquired through auditory impressions retards mental growth. Such children show imperfect language development and are often considered as dull. They are deprived of the company of other children and so are likely to become queer and anti-social. It is the duty of the teacher to note symptoms of this defect in the child and early seek the advice of physicians. At times deafness is caused by tonsils and adenoids and removal of these cures the child. But if the cure is not possible the child ought to be taught by a different method in segregation from normal boys.

SENSE TRAINING

Madam Montessori has invented a new method of training the senses of the child. We cannot, through such a training, remove the defects of the senses or increase their congenital powers, but we can make the senses work more efficiently. Sense activity of the children cannot be increased, but through proper use they can be made more efficient. Madam Montessori's *didactic apparatus* purports to achieve this object. The sense of sight is thus trained to distinguish colours of varying shades to recognise figures and to estimate distances.

The sense of touch is trained through distinguishing hard and soft, rough and smooth, hot and cold, light and heavy. The sense of hearing is trained by making the child arrange hollow blocks containing shots of different sizes, distinguishing smaller and bigger shots through sound impressions. The child is blind-folded and then asked to touch the person who may call him out.

There are two things which make this system of special value. First, each sense is so far as possible trained in isolation from the rest. *One thing at a time* is a basic principle of the Montessori system. The child is getting in his ordinary experience a mass of impression jumbled together. Hence its attention is diffused. In the Montessori System the attention of the child is fixed to one kind of impression only. In this way the child has better knowledge through the particular sense than is otherwise possible. Faulty perceptions are often due to faulty habits of attention.

The second principle which has really made the method a success is that of *introducing playway*. The mentally defective children were trained by Seguin through somewhat a similar method as adopted by Montessori in her training the infants. But the spirit of playway was lacking in it. One of the main conditions of attention to an object or activity is the presence of interest in it. In the absence of motivisation, no concentration of attention or learning is possible. The child's impulse for play is utilised by Montessori in distinguishing sense impressions.

PERCEPTION

NATURE OF PERCEPTION :—Perception is an elementary form of cognition. The basis of perception is sensation. When the sensations are interpreted in light of previous experience we have perception. Thus perception is said to be presentative and representative in character. The presentative element is the sensation and the representative element images connected with the sensation. Thus remembering and imaging are involved in perception. "If we were utterly unable to remember a reptile and its characteristics or to imagine such a thing on the basis of whatever indirect experience we may have had with it through the description that other people have given to

us, we should not perceive it at all in any practical sense of the term. At the most it would be, as far as we are concerned, only another object there in the grass. In other words, perceiving is bound up with images that are in our mind's eye or ear—sometimes conjured up out of whole cloth **

Further in perceiving an object there is also the relational activity of the mind involved. The relational activity is the attaching of meaning to what is presented. We might also view perception as a product of attention. The selecting or analysing and constructing activities of attentive consciousness play an important part in determining the nature of the percept.

NATURE OF CHILDREN'S PERCEPTS.—The meaning that we attach to any sense impression would depend on past experience. The richer the experience the fuller will be the meaning. The child's experience is limited, hence his percepts are vague. Children's percepts *lack in richness, in definiteness and in detail*. Stanley Hall has conducted researches in determining the contents of the children's mind and found appalling ignorance of common objects. Hall says, "There is next to nothing of pedagogic value, the knowledge of which is safe to assume at the outset of school life." It is necessary to converse on common objects with children and to direct their attention to the peculiarities of each. The child's attention is very fleeting, it cannot interest itself for long in any object, so left to itself, it would not notice some of the most important features of it. For this reason also its perceptions are faulty and it needs training in perception.

Another difference between the perception of the child and that of the adult lies in the fact that the child *requires much more stimulus to call up a percept*. Our past

* Gault and Howard. *An Outline of General Psychology*, p. 142

experience enables us to interpret any sense experience quickly. The child requires to read every word in order to grasp the meaning of a sentence. Similarly he has to read every sentence to know the meaning of a paragraph. Adults, on the other hand, require to concentrate their attention on a few words to catch the sense of the whole paragraph. When speaking to children in the class room every word has to be distinctly and clearly spoken. We should not assume that the child understands the language in the same manner as we do. What is not distinctly heard by us is supplied by our mind and we grasp the meaning of the speaker clearly. The child, on the other hand, has no such power of filling up the blanks. Hence, if a few words are not heard by it, he misses the whole trend of talk and our teaching is wasted.

The third difference between the perception of the children and of adults lies in the power of "*mind's set*", or *the passing mental content to determine the percept*. This is called by Herbart the apperceptive mass of a person. Every one is influenced in his actual experience by what has been going on in his mind before. But this is much more so with children. The child cannot shake off what may have been going on in its mind a minute before. From this it follows that the teacher while teaching children should not take plunge into the subject at once. He has to prepare the minds of the students for it and has to make a clear statement of the aim of the lesson. There is need for "preparation" in every lesson, and the students should know what they are to look for in it. They should not be left to grope in the dark.

A fourth difference may further be noted. *Children's notions of space and time are not as clear and accurate as those of the adults*. This necessarily follows from the first. Space perception is an outcome of kinaesthetic impressions and requires movement of limbs on the part of the child. Co-

ordinations of kinaesthetic and visual impressions require to be established. The child can judge near distances quite well. To the child all the stars are equally distant. A few months old child can judge accurately the distance of objects lying within the reach of its hand, but distant objects lying a few feet away cannot be judged. Even grown up children who have not actually measured spaces have vague notions of distance. The child has to be taught how to judge space. Teaching through the map, before the child has sufficient concrete experience of space, results in contracting the whole world to a few feet of the space of the wall. The map idea sometimes so much dominates the mind of the child that it forgets the actual space. This is due to faulty methods of teaching of Geography, in which symbols are taught before actual experience of reality is attained.

The child's notions of time are also very indefinite. It cannot imagine long periods. This requires filling up of the contents of the period imaginatively. But as the child's experience is poor, it cannot fill a period of time imaginatively. Hence temporal relations have to be *spatialised*. Children should be taught dates through time charts. The sequence of events has to be clearly impressed in the mind. Many students are found complaining that they cannot remember dates of History, though they can remember facts. This simply means that their temporal ideas are not clear. It is due to faulty method of teaching the subject. The students know simply words; they have forgotten the reality behind.

ILLUSIONS OF CHILDREN —From the nature of the child's perceptions, it is evident that children are more liable to illusion than are the adults. Illusion is caused by a wrong interpretation of the sense experience. Children have limited power of interpretation and their fancy is always active. Hence it is natural that they should

commit more mistakes in their perceptions than the adults do. Many of the lies of children have this source. Sometimes illusions are caused by emotional states. When a story is told to the child about ghosts, the child might begin seeing a ghost when the external stimulus is only a coat hanging on the wall. This is due to the fear impulse excited in the child. His fancy is made active and he sees things not actually present.

OBSERVATION

NATURE OF OBSERVATION —Observation is a process of the mind more advanced than perception. It presupposes development of ideas. Animals are incapable of observation as they have no ideas. They can perceive objects but they cannot observe them in the same way as human beings can do. Perception requires minimum of meaning, but in observation the play of ideas is great. When a dog comes to a room it sees several objects, so does a boy. But the dog, however much it may attend to any object, cannot appreciate its value. It has no categories in the mind to apperceive those objects. The boy, on the other hand, has such categories and while looking at any object it is assimilating this new experience with the old. He is not only cognising them, but recognising them as belonging to a particular class and intended for particular purpose. If there are certain features in the object that make it difficult to be assimilated among the old categories, he analyses the object and distinguishes the essential features from the non-essential and then assimilates the object to some categories. This analytico-synthetic activity of the mind is called observation.

TYPES OF OBSERVATION :—According to Meumann there are three kinds of observation—inquiring or purposeful, non-purposive and purposive.

(1) *Inquiring or purposeful* This is the kind of observation which is directed by a previously determined point of view. The observer has certain problems in the mind and he knows what he is to look for in a given situation. The attention is highly concentrated in such an act of observation. Thus when we take a class to a picture gallery or a museum, having told the boys the merits of certain pictures or peculiarities of objects, the observation of the boys will be purposeful. The observation of the proof-reader in finding out the mistakes in the print is purposeful observation. Voluntary attention is required to carry on such an observation.

(ii) *Non-purposeive*—This is surprised, forced upon one by some sudden occurrence in the environment. Thus the banging of the door by the air makes one observe it. The attentive consciousness in this case is non-voluntary and forced.

(iii) *Purposive*.—It is characterised as passively expectant, in which one is definitely attentive, open to any and all impressions, to which one comes with no points of view clearly in the mind. There are no set questions, yet one is alert as to any new feature in a situation. We can say that between the purposive and purposeful type there is only a difference of degree so far as the enquiring attitude is concerned. There is no difference of kind. All kinds of observation, as we have pointed before, require a certain preparedness of the mind. Where such preparedness is wanting, there is mere perception and no observation.

TRAINING IN OBSERVATION —Training children in observation naturally means training them in the purposeful type. This requires control of attention and increased activity on the part of the child and it results in clearness of knowledge. Efficient observation requires a good stock of ideas. Children's stock of ideas is very limited, hence their observations, unaided by the teacher, are imperfect.

Children ask many questions and are curious about every new thing they come across. This sometimes leads people to suppose that they are good observers. In reality it is not so. They have scanty ideas and their power of apperceiving anything new is poor. Moreover they are moved more by feelings and impulses rather than by a desire to gain accurate knowledge. It is, therefore, an important part of the duty of the teacher to guide children in their observation and to direct their attention to what may remain unnoticed by them. The teacher should do it through putting suitable questions to the children, through making them handle objects, draw sketches or prepare models of them. Doing helps knowing, and the more is the child made active, the better will his observation be.

In an observation lesson the teacher should direct the attention of the student towards particular features of the objects. He should then be asked to describe what he sees. The teacher should not tell what the boy has to see. In doing so the learner remains passive and the selective activity of his attentive consciousness will not be required to come into operation. When the child has to express his own observations, his speech improves, his ideas increase and old ideas become clarified and well impressed in the mind.

Observation lessons have a great value in developing children's power of observation if they are properly conducted. The teacher should set before the boys what they should look for. There should be a clear point of view from which observation is to be made. This has to be supplied by the teacher. The objects as appearing before the child give him only a mass of confused knowledge. The teacher is to systematise this knowledge. He has to direct in what form the knowledge is to be received and this is done by making the aim and the point

of view clear to the boys and guiding them by putting a set of well thought out questions

Reference.—

- 1 Dumville *Fundamental of Psychology*, Ch. IV
- 1 Dumville. *Fundamental of Psychology*, Ch. IV
& V.
- 2 Gault and Howard *An Outline of Psychology*,
Chap VI
- 3 Norsworthy and Whitley. *Psychology of Child-
hood*, Chap VIII

CHAPTER XIV.

IMAGINATION

NATURE OF IMAGINATION —The process of imagination consists in mentally reviving the experience of any object ever perceived by us when the object is not present to senses. "Sensations," says James "once experienced modify the nervous system, so that the copies of them arise again in the mind after the original stimulus is gone"* Every experience leaves a trace of itself in the brain and when the nervous centres so 'impressed are re-excited in some way the experience is revived in the form of an image. An image thus is a mental representation of an originally perceived object As James says "When I have attended carefully to an object, or when I have seen it a number of times and paid some attention to it, I can often recall a more or less imperfect representation of it even after a considerable interval. This is usually called by a single word image "

AFTER-IMAGES :—The imaginative activity of the mind has several grades The lowest form of it produces what is known as an after-image Next comes memory image. Then we have imagination proper of the reproductive and creative type. An after-image is an experience which we have due to mere persistence of sensation after the external stimulus is gone When a burning torch is moving swiftly, we see a circle of light. The torch is certainly at one place at a time during the course of its movement but we see a circle This is due to the fact that the excitement caused in the brain centres by one of the positions of the torch does not die out before another

*James . *Principles of Psychology*, Vol II p 44

excitement is produced. Thus a series of excitements become fused into each other and so we have an experience of a circle. This is the reason also of our seeing only the white colour when a spectroscopic swiftly rotates before our eyes.

These after-images may be negative or positive. In a positive after-image we experience the continuance of the same sensation whereas in a negative after-image the opposite type of sensation is experienced. Thus light is followed by darkness, blue by yellow, yellow by blue, red becomes green and green by red.

MEMORY IMAGE —When, however, we recall to the mind the experience of an object which we may have been perceiving by a definite act of attention we call it a primary memory image. It is not due to the persistence of sensation but due to a definite act of attention and will. The after-images do not require the efforts of the will and are within our control. The memory image, on the other hand, requires an effort of the will and continues to stay only as long as the effort lasts. This we may call a kind of imaginative activity of the mind.

But the phenomena ordinarily ascribed to imagination are those mental pictures of possible experience to which the ordinary process of associative thought gives rise. The images are called up not because there has been a stimulation of the nervous system just before they are called up, but they come due to the laws of associations that operate in all over thinking process.

IMAGES AND PERCEPTS —Images are sometimes called revived percepts but there are marked differences between the two. This is quite obvious to the laymen though philosophers have disputed over the distinction. It is not the same thing to build a real castle as to build the one in imagination.

MENTAL IMAGERY OF CHILDREN.

DIFFERENT TYPES OF MENTAL IMAGERY —The word image in psychology does not refer merely to the visual experience of the object—as it does in ordinary speech. There are *visual images*, *auditory images*, *touch images*, *motor images*. In our experience of objects, however the several kinds of images are fused together. Sometimes, however, we might have only one kind of image and not of other kind. According to Galton, individuals differ in their capacity for reviving different kinds of experience.* Some cannot recall the visual experience, but can recall the auditory ones, such persons are called *audiles*. So they are *visules* who mostly depend on visual images. Then some people are *motiles*, they can recall motor impressions best. They are sometimes called *tactiles* because they usually depend on touch. Blind persons belong largely to this type whereas the blind-deaf are entirely of this nature. The blind are taught alphabet by touch.

DIFFERENCES BETWEEN CHILDREN AND ADULTS IN MENTAL IMAGERY —There are great differences between the mental imagery of adults and that of children. Children visualise more, they use concrete imagery more, their images are more vivid and larger in number. Adults

*James *Principle of Psychology*, Vol II p 52
The same writer says further —

“The power of visualising is higher in the female sex than in the male and is somewhat but not much higher in public school boys than in men. After maturity is reached the further advance of age does not seem to dim the faculty, but rather reverse, judging from numerous statements to that effect. But advancing years are sometimes accompanied by a growing habit of hard abstract thinking and in these cases—not uncommon among those whom I have questioned—the faculty undoubtedly becomes impaired. There is reason to believe that it is very high in some young children who seem to spend years of difficulty in distinguishing between the subjective and objective world. Language and book learning certainly tend to dull it” (James. *Principles of Psychology*, Vol II page 55).

have more auditory images. Whereas children picture to themselves objects whenever they think of them, adults think of them with the help of their name, i.e., they think in terms of words. Thinking in terms of verbal images, of course, is a device of the mind to economise time and energy spent in thought. A verbal image is more definite, accurate and easily retained in the memory. It is the only image available for abstract thinking and without it no progress in any constructive field of thought, art or literature is possible. The child, however, attains this power of thinking in terms of words gradually. It is to be gradually developed.

Children differ from adults not only in the kind of imagery they use, but also differ in the vividness of that imagery. At times this vividness is so great that children cannot distinguish between percepts and images. This is specially the case with children who are of three to six years of age. Hence many a lie of such children are not lies at all. Some of the statements of children which we stigmatise as lies are simply expressions of facts as they exist to the child mind. We should not forget the fact that very often the child fails to distinguish a fancy from a fact due to the vividness of his mental imagery.

THE EFFECT OF USE AND DISUSE.—Philosophers and scientists and people who do too much of thinking are usually audiles. Most of their thinking is in words or symbols, they do not have the necessity to visualising objects and events, for that would retard the rapid activity of thought. Thus their power of visualising dies out through disuse, even as (in case the cited by Darwin in his essay on "Effect of Use and Disuse") the insects of the island of Madera lost the power of flying through disuse, or as certain types of moles lost their sight because they mostly lived under ground in holes. The power of visualising is generally higher in females than in males, and in

children it is higher than in adults. The researches of Galton have conclusively established this fact. He says, "The great majority of the men of Science whom I first applied protested that mental imagery is unknown to them on the other hand when I spoke to persons whom I met in general society, I found an extremely different disposition to prevail. Many men and yet a large number of women and many boys and girls declared that they habitually saw mental imagery and that it was perfectly distinct to them and full of colour"*

EDUCATIONAL SIGNIFICANCE —Here is a very valuable fact of educational significance. The teacher, who wishes to impress some experience on the mind of children so as to be permanently retained by them, should resort to all the several means of impressing it. When he is teaching a word, let it be pronounced by them—this will make the impression through the ear and those who are acute in re-calling word images i.e. those who are audiles will remember the word well. He should write the word on the blackboard to enable them to visualise. This will be specially useful to visiles. He should make them utter and spell the word and write it themselves in their notebooks. This will enable them to have motor to tactile images. Sometimes people who are deficient in one type of imagery excel in some other type. Thus Mozart could write from memory "the *Miserere* of the Sistine chapel" after two hearings. This shows the acuteness of his auditory imagery. Such persons think in the language of sounds. In order to remember a lesson they have to remember the sounds of words and not the look of the page. In most people, however, the visual, the auditory and the tactile imagery re-enforce one another. The pure visiles or audiles are rare. Usually the visual imagery plays the more important part in the life of most men. The teacher

*James · *Principles of Psychology*, Vol II p. 60

should aim at developing in the mind of the child the power of reviving all kinds of images. Sometimes when by disease a man loses his power of reviving visual images, he may yet fall back on auditory images.*

Just as it is true of instincts that they die of atrophy so too it is true of all the powers of the mind. By not putting them into use we lose them. The power of visualising dies out in the case of scientists and philosophers, because it is not put to use. Telling stories to children and making them interested in vivid descriptions of scenes are of immense educational value. It has been noted that just as individuals differ in their power of visualising so even nations differ. The French are better visualisers than the English. This is due to their aesthetic tastes and their highly developed literature. The English on the other hand, being practical are not good visualisers. Among Indians one may venture to suggest that the Bengalis are superior to others in their power of visualising. One has only to note the descriptions of Tagore and D. L. Ray to be convinced of this.

*James in *Principles of Psychology* quotes professor Charcot who describes the condition of one of his patients, a merchant of Vienna, who was a great visualiser and who became very miserable due to losing his power of visualising scenes. This patient before the appearance of the disease was a great scholar. He had learnt several languages German, Spanish, French, Greek, Latin and had mastered the works of Homer, Vergil and Horace. But due to some trouble in business, he had anxiety and loss of sleep. This resulted in his losing all the visual pictures. He had learnt everything only with the help of the eye, hence all his scholarship was gone. He could not recognise even his friends, relatives and children. So complete was the loss of memory. Every scene was a new scene. He did not remember even his own face. He says, "My wife has black hair, this I know, but I can no more recall its colour than I can her person and features."

He would have been completely helpless. But in course of time, he realised that there was no defect with his auditory impression. Now he began to learn things in a new way. Things which he wanted to remember he repeated to himself several times aloud and thus through auditory images he could carry on to some extent his business. (*Principles of Psychology* Vol II p 58, 59)

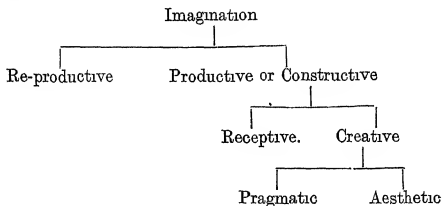
CHILDREN'S LIES —Knowing the peculiar nature of child's images and his tendency to wish fulfilment a closer study should be made of children's lies. As Stern says, "A large number of so-called children's lies are in truth only misconception on the part of their adult judges, most real untruths on childish lips are but the product of their teacher's influence, and only a comparatively small remainder really originate in the child's own soul." Lies imply three things—(1) Consciousness of falsity (2) Intentional deception (3) A distinct purpose in view. False statements, consciously made, to gain an end by deceiving others are lies. This implies a highly developed mind. The child may have no intention of others, and he may not be conscious that by making a false statement he is deceiving. Very often, however, the vividness of child's imagination itself is responsible for his false utterances. As Norsworthy and Whitley point out, "Children are not deliberately telling lies, they either think thus and so happened, or dwell so much on what they wish had occurred that there comes to be no difference in their minds between the world of fact and the world of make-believe. Scolding or punishing for this kind of lying is unfair to children and does not get at the root of the difficulty. They must be taught the difference between the real and the fancied without detracting from the charm of the latter." Children's imagination becomes extremely active under some impulses. The fear impulse particularly makes them see things which do not exist in reality. A coat may be hanging on the wall and the child might see in darkness a giant standing there. This is due to the excitation of the impulse of fear. The child's mind becomes predisposed to it due to stories of ghosts and hobgoblins told by mothers and nurses.

IMAGING AND IMAGINING —The word imagination in psychology is used to designate all production of images. In common speech, however, the word is used only for

the production of new combinations which seem to go beyond the experience of objects. When I merely picture before my mind's eye the scenes of the cinema hall just visited, I am not said to be imagining but only remembering them. But if I picture to myself a new combination of scenes, then certainly it would be said that I imagined it. Even psychologists think it proper to make a distinction between the two activities. The former activity they call *imaging* and the latter *imagining*, though *imagination* as substantive is a word which is employed to cover both the activities.

CLASSIFICATION OF IMAGINATION

Imagination may be looked upon from different points of view and be classified accordingly. Here is one classification



REPRODUCTIVE AND RECEPTIVE IMAGINATION —All imaginative activity is dependent upon perception or the original experience gained through the stimulation of sense organs. When the received experience is merely the repetition of the original one, a mere copy of it, the activity is designated as 'reproductive imagination' or 'memory', but when the activity involves changes in old situations,

it is called productive imagination. Productive or constructive imagination may be stimulated or guided by another person's imagination. For example, when the teacher is telling a story and the child is mentally constructing pictures corresponding to the scenes depicted in words, the imaginative activity of the child is guided by the teacher. This sort of imagination is called receptive or interpretative imagination. On the other hand, when the child writes out an imaginary journey through different lands, he is engaged in the activity known as creative imagination.

CREATIVE IMAGINATION.—Creative imagination may be directed either to some practical end, achieving some goal, as for example, making a programme for some journey, arranging for a tournament, planning the celebration of a festival, or it may have no practical end in view, the subjects may be engaged in the imaginative activity for the pleasure it yields. The former type of imagination is called pragmatic and the latter aesthetic. Education aims at developing both types of imagination. All the great schemes are first conceived in the mind. The hypothesis of the scientists, the schemes of the engineers, the plans of great architects all are products of pragmatic imagination. "A Newton begins by imagining the moon falling towards the Earth, and ends with the law of gravitation. A Stephenson imagines the locomotive and revolutionises the traffic of the world. A Christopher Wren imagines a Saint Paul church and gives us one of the finest buildings of the modern times"*

DEVELOPMENT OF THE IMAGINATION OF THE CHILD

We can develop such imaginative power of the child in the class room as well as outside it. The child may

*Dumville. *Fundamentals of Psychology* p. 93.

be asked how much he would have to pay for a carpet that may be required for his class room, the price per foot being given to him. Scouting, games, excursion—all these practical activities develop their pragmatic imagination. It is true that these activities require the exercise of other powers of the mind also, but they cannot be carried on without the help of imagination. ✓

In common speech what is generally referred to by the word imagination is mainly of the type named last viz, the aesthetic. In it the activity is carried on for its own sake. Some educationists deprecate the introduction of this in school work. Madam Montessori condemns the practice of telling stories to children for she thinks that it encourages them to indulge in day-dreaming, reveries and all sorts of fantastic ideas. They cease to take vigorous interest in practical life. The world of their imagination and fantasy becomes more real to the child than the actual real world. Then again, the child conceives in the tender age many notions which are contrary to science, and in later life it becomes impossible to eradicate the impressions caused by the unscientific notions which are imparted to him at the most delicate and plastic period of life. He, therefore, cannot adapt himself effectively to the environment in which he is placed. He becomes an introvert and socially very inefficient.

STORY-TELLING.—The contentions of Madam Montessori seem plausible, but they cannot be accepted. Story-telling was advocated even by Plato who would banish poets from his ideal state, since they encourage people to indulge in lies. With regard to story-telling, however, he is very enthusiastic. He advocated the use of stories to convey moral truths to children. Children take delight in animals and all fantastic notions. We have to utilise this tendency of theirs for the sake of their education and not repress it altogether. There is a great

truth in the theory that the child in its process of growth recapitulates the experience of the race. The savage delights in the fantastic, so too it is natural for the child to take delight in it. The child is not an immature adult, his tastes are different. He is to grow out of them slowly and gradually. The teacher can give his help in this process of growth but it would be doing violence to his nature to cut him away altogether from his natural interests.

DRAMATIZATION —Teaching through dramatization is very helpful in developing the child's imagination. "Dramatization is the working out by the child of his constructive images in terms of action. Working out a constructive image in terms of action necessitates a clearing up of hazy parts, a working of details, thereby making the ideas more clear and definite. It organizes the imagination by developing perspective, and making clear the need of emphasising the details. It adds a richness to the thought content by its arousal of emotional background. It develops co-operation, initiative, self-confidence and the use of language, and is an aid to memory."*

Dramatization helps children to express themselves and to give life to the phantoms of the air. It adds to the richness of their life and systematises their thinking. The teacher should therefore seek opportunity to dramatise a dialogue or a story. What games of personation are to younger children, dramatization is to older ones. Life expands in both these cases. There is a culture of emotions and school work which may otherwise be dull gains charm.

But to make dramatization of pedagogic value the teacher must not lose sight of the end that is to be gained. The end to be gained is the culture of the mind and not effect on the spectators. The planning ought to be done by the students. That will require constructive thinking.

*Norsworthy and Whitley *Psychology of Childhood*, p. 165.

on their part But this is seldom done. Again the teacher has to guard against the arousal of an emotion too often, for it unfavourably reacts on the child's character. "The child may form the habit allowing his real emotions, whose function is to inspire conduct, to wear themselves out in acting"*

UTILISING DAY-DREAMS — Psycho-analysis has further thrown a flood of light upon the nature of the imaginative activity of the child's mind The child's indulging in day-dreaming is a compensatory activity of the mind by which he makes good for his failures and disappointments in the world of reality The child who is checked in such an activity is deprived of one of the great means of consoling himself when failures come He becomes stupid. Green in his book *Psycho-analysis in the Class-room* has pointed out that the reveries and day-dreams of the child can be made a very good use of by directing the energy behind such activities to composition exercises and various forms of creative work The stories themselves become less fantastic than otherwise they would be They, so to say, provide channels, through which the particular form of energy, which the child's mind has in abundance, finds a direction of flow

GRADUAL EVOLUTION OF IMAGINATIVE POWER — The teacher has to develop all types of imagination of the children He may begin with reproductive imagination The culture of which easily leads to the development of his higher imaginative powers. As Dumville, says "We cannot hope for the right type of creative imagination until the tender plant of reproductive imagination has been carefully tended." Children should be induced to make efforts to reproduce what they have observed They should be required to write down accounts of their observation as well as to make sketches to illustrate stories. Thus children in

* Norsworthy and Whitley . *Psychology of Childhood* P. 166

some progressive schools are encouraged to draw suitable pictures of the scene depicted in stories. By such representation their ideas become accurate and their perceptions become keen. Modelling in clay and plasticine is also very useful for the culture of imagination

The teacher should encourage all such efforts of children, who have of course immature minds, by sympathetic appreciation. The child cannot become a great creator by one big jump, he is to be led up to that stage by slow degrees. Composition exercises and drawing are of immense value in this direction. One creative type of imagination is developed by what is known as the heuristic method of teaching. The child should be given some scope for original work and his little effort of originality should be appreciated.

Imagination is a very important power of the mind. Its cultivation is necessary for the development of the child mind. It is the basis of other higher faculties. There can be no thinking or forming of judgment and conception without the initial power of imagination. Imagination depends upon perception and observation, but they themselves become more accurate and perfect through the exercise of imagination.

References —

1. James—*Principles of Psychology*, Chap. XVIII
2. Dumville—*Fundamentals of Psychology*, Chap. VI.
3. Norsworthy & Whitley—*Psychology of Childhood*, Chap. IX.
4. Green—*Psycho-analysis in the Class-room*.

CHAPTER XV.

MEMORY

NATURE OF MEMORY :—Any thing experienced by us is retained by the mind in the form of dispositions which facilitates the revival of the experience. The mind has the power of conserving experience and mentally reviving them whenever such an activity helps the onward progress of the life impulse. The conserved experience has a unity, an organization of its own and it colours our present experience. Such conserved experience is called by Stout a 'mental disposition', others call it 'engram-complex' or simply engrams. This power to conserve experience is fundamental to life and we have it in common with the animals and insects. It is upon this that all mental growth and modification of behaviour by experience or learning depend. 'Mneme' is the term generally used to denote this power.

PURPOSIVE CHARACTER OF MEMORY —Memory was conceived of by the ancient Greeks as something passive. Thus Plato compared memory to a wax plate which receives impressions of experiences as they occur to us. This is, however, not a correct description of this important power of our mind. Memory or rather remembering implies an active process. It involves a selective activity of our consciousness. Just as attention involves analysis and selection of impressions so too memory involves those processes. All the impressions that assail our sense organs are neither attended to nor are they remembered. Attention may be called to many things, that later on prove useless, but memory does not retain all of them. Memory is purposive even as attentive consciousness is, hence choice and selection of what is best in things attended to is always involved in the process of memorising.

This is an important fact to be borne in mind. For if memory were not purposive in its nature, it will not advance the inner urge of life to express itself. Experience is conserved by the *will to live* just because it helps in its further adjustments to the environment or its desire for expression. Memory is, as Schopenhauer said, a menial of the *will*. Hence it is ever to be thought of as an active agent of life and not a passive wax plate.

FACTORS IN MEMORY

The word 'Memory' is sometimes used to denote "mneme" or the general retentiveness of the mind. In the strict sense, however, the term memory is narrower than the term "mneme". As Ross says "It is mneme risen to the level of apprehension". In mneme the reference to the past is implicit, but in memory it is explicit. Mneme bears the same relation to memory as hormone bears to conation. The former are the unconscious, the latter are conscious processes. Thus memory implies three factors—*retention* of experience, its *recall* and *recognition* besides learning which we have already dealt with in a previous chapter. The recall in the case of memory is in clear and distinct mental images, hence it implies a power to image a mental event, which is lacking in the case of the brutes. They can recall events just enough to enable them to recognise the old in the new situations, but they cannot mentally picture them to themselves. But it is this latter power which enables an individual to localise an experience in the past.

RETENTION

Retention is a resting state of impressions received by the mind. Anything learnt is retained by the mind in the form of psychological (according to some, physiological) dispositions. As yet the knowledge of physiology

has not sufficiently advanced to explain retention physiologically by the laws of neural connections. Yet many conjectures have been made

Retention is determined by three important conditions. These are *frequency* of impressions, their *recency* and the *interest* with which they are received. The more often is an impression repeated the deeper does it become, and it is likely to be retained for a longer time than the impression which is not so repeated. As time passes, however, the impression tends to be obliterated. Hence *recency* is a factor of advance to retention. We have only faint impressions or scanty memories of stirring events that occurred in the long past, but have quite vivid memories of things that occurred a few days ago. The time factor operates in memory even as it operates in other phenomena of life.

Interest is a very important factor determining retentivity. We do not retain all things equally well. We remember things in which we are interested. Memory is a selective process even as attention is. If every thing were retained by the mind equally well, memory will lose much of its value. Good memorising, it has been well said, is judicious forgetting. It is good that much of our experience which is not likely to prove of service to us we naturally forget. For if it were retained we would have to go through all the mass of useless facts in order to recall any event. Recall thus would become practically impossible.

The factor of *recency* and *frequency* are involved implicitly in the factor of interest. For one naturally very often goes through events or facts in which one is interested. He repeats them often in his mind. The memories of them thus always remain fresh. Thus a student who is interested in his studies thinks of the authors

and their ideas very often in his mind. When even an original idea occurs to his mind he tries to compare this idea with other ideas he already possessed. The ideas thus lying blurred on memory's page are enlivened. They become more firmly fixed in the mind. Similarly a student interested in games remembers the names of all the important players of different teams of his country. We are sometimes amazed at such retentivity. But it can be very easily explained by the fact of his interest in the subject, the amount of energy he spends in thinking about the players. The same student may be a bad memoriser of school lessons. The lawyer knows about laws and clients, the merchant about prices of commodities and customers just in the same way as the scholar knows important books on the subject of his study as well as ideas contained in them. Each excels in remembering the class of ideas in which he is interested. In prescribing any course of study for any student one must study his interests. One who is interested in mechanical pursuits cannot be a great scholar and vice versa. Each can perfect himself after his own kind, let the learner's studies be sorted in accordance with his natural aptitude and interests.

Individuals differ with regard to their power of retention and recall. Some can retain much but their recall is limited, others can recall events easily soon after they occur but cannot retain them for long. Children generally have more retentive power than adults, whereas their power of recall is less. Meumann found that up to the age of thirteen there is slow development of immediate memory, then there is a rapid advance up to sixteen, it continues to grow upto twentyfive when the maximum is reached. Thus the adolescent period is the best for memory work. From this it follows that the inability to reproduce a fact by the child is not necessarily the mark of its having lost it from its mind. Children who secure low marks in examinations in the lower standards where the success in the

test mainly depends on the power to recall, are not necessarily dull or bad in memory. They may do well in latter life. For, by then the power of recall is more developed, and recognition, which depends upon retention, begins to play an increasingly important part in tests or in situations of life.

In teaching children this fact should be borne in mind. There is an old adage cited out by Rusk, "Learn young learn fair." Those things that we wish should remain well impressed in the mind should be taught to the children in their pre-adolescent stage i.e. between the age of 9 and 13. The impressions of infancy are also deep. It is in light of these that experiences of later life are interpreted.

It is generally held that the individual differences in the retentive power are due to heredity. W. James says, "General retentiveness is a native quality of the brain given once for all and probably unchangeable except so far as bodily health affects it." Some people have brains like wax, others have jelly-like. Little improvement in this direction is possible. Experiments of Mc. Dougall and Miss M. D. Smith, however, show that retentive power does increase. For there is the second important factor that determines retention as much as heredity does—it is *interest* which typifies the affective-conative aspect of life. Those experiences that satisfy an urge of life are easily conserved by the mind. Thus events that please at the moment of occurrence or that may have future value are well remembered, while those whose memory would annoy us are erased out of the mind. For our life is fundamentally *hormic* in character, it is a *will to live* and to enjoy.

RECALL

The second factor of memory we have called *recall*. Recall is a learned response to a stimulus. This

depends on retention, the formation of associative links among ideas or experiences, and the presence of the stimulus. "If you have memorised Hamlet's soliloquy" says Woodworth, "this title serves as the stimulus to make you recall the beginning of the speech and that in turn call up the next part and so, or, if you have analysed the speech into outline, the title calls up the outline and the outline acts as the stimulus to call up the several parts that were attached to the outline in the process of memorization. When one idea calls up another, the first idea acts as a stimulus and the second is a response previously attached to this stimulus"* What is well retained is easily recalled. But though an idea may be there in the mind yet it may not come up to consciousness due to lack of something that may prompt it to emerge from beneath the level of conscious thought. For this associative links among several ideas should be formed.

LAWS OF ASSOCIATION

There are three laws that determine the association of ideas. They are named by the psychologists as the *law of contiguity*, the *law of similarity* and the *law of contrast*.

The law of contiguity states that two experiences which occur one after another get associated with each other in such a way that when one is recalled the other is also recalled. Thus if after the school bell rings, boys are usually found to get in or out of their class, then the ringing of the bell will remind us of the latter events.

The law of similarity states that similar events and facts become linked with each other so that the one easily

**Psychology* p. 355

reminds the other. Thus if the face of one man resembles the face of another the one reminds the other. Similarly the character or activities of one person remind us those of another which are similar in nature. Jesus brings to mind the Buddha, Napoleon, and Caesar.

The law of contrast states that the contrasted characters get associated with each other so that one reminds the other that stands in contrast with it. A specially vicious man may remind us of a specially virtuous man. The deeds of Nero may remind us those of Asoka.

Teachers should avail of the laws underlying the natural working of the human mind. To work according to them is to follow the line of least resistance or to enlist Nature to one's side. When a teacher makes use of time-charts and genealogical tables to help his students to memorise dates and events, he is enlisting the law of contiguity in his favour, when he compares the character and reign of Elizabeth with those of Akbar he is invoking the law of similarity, and when he contrasts the religious policy of Aurangzeb with that of his predecessor Akbar he makes use of the law of contrast. The associative links have to be formed by consciously directing the attention of the boys to points of similarity and of contrast, for these exist only in so far as they are apprehended by the mind. This requires insight which the teacher has to give to his pupils.

PERFECT AND PARTIAL RECALL —Recall is the mental revival of past impressions with an awareness that the experience to which the impressions refer had occurred in past. When the recall is *perfect*, the localisation of the experience in the past is definite. When it is not so, recall is *partial*, whereas when the reference to the past is absolutely absent, the revived experience will not be called recall but simply a "memory image."

All effective learning results in speedy recall. The success of life depends on recall of past experience when needed. We can improve recall by improving retention. *The laws of association* which have been discussed above are at the basis of recall just as they are at the basis of retention.

INTERFERENCE IN RECALL —When associative links between previously learnt ideas are broken recall is difficult. In such a situation one idea does not serve as a stimulus to another, hence the latter does not emerge to consciousness. Sometimes, however, the associative links are present and yet we fail to recall what we want. Thus at times we fail to recall at the moment required the name of some person whom we know well.* In the examination hall sometimes we write wrong answers to a question, but we are reminded of the right answer as soon as we get out of the hall. That we had not forgotten the matter we tried to remember is proved by the fact that we remember the same thing later. Obviously the presence of some interference or inhibition is responsible for the difficulty in recall. Most of these disturbances are of an emotional nature. Fear may paralyse recall. Anxious self-consciousness, or stage fright, has prevented the recall of many a well learnt speech, and interfered with the skilful performance of many a well trained actor.

The teacher has to bear this fact well in mind. While teaching as much as possible natural conditions should

*A few days ago an old pupil of mine came to me. In the course of conversation he asked me the names of the brilliant students of the last year's batch. I gave him the names of all except of the only person who has always been corresponding with me since his departure from the college. As a matter of fact the only person whose name I was anxious to communicate to the visitor was the very man whose name I was forgetting. As soon as the visitor departed the name emerged to consciousness. The name was Brahma Swarup Gupta. I had associated his name in my mind with God which the word "Brahma" in Sanskrit means.

(Woodworth *Psychology* p 355).

be secured. One of the reasons why our ordinary public examinations are condemned, is that they create an artificial atmosphere of emotional excitement for boys. Hence they no longer remain the exact measure of the ability of the pupils. In intelligence testing (the new type of examinations) the examiner while administering the test has to take the greatest precaution against emotional disturbances in the minds of the pupils. The result of a test may be absolutely vitiated due to the presence of some excitement.

The presence of a distraction in the mind also acts as an interference to recall. When there are two responses connected with a stimulus, neither of them may come up to the mind with an assurance of certainty at the presence of the stimulus. Each one of the responses interferes with the other in its emerging to consciousness.* Even when one of them succeeds, there is the presence of the doubt with regard to its accuracy.

Doubt is a great distraction. When one is trying to recall anything and doubt comes in one fails to recall it. It puts one on the wrong track, and in a state of doubt the greater the effort one makes in recall the greater would be the strength of the interference. Hence in such a state of mind one should give up making effort. The matter should be dropped for a while and one should come back to it afresh. The interference by this time would have automatically died out. The wrong associations which

*The phenomenon of interference of a response due to the association of a stimulus with two responses is very well demonstrated in the case of reflexes. "If you tickle a dog's back just behind his shoulders he will raise his paw and go through scratching movements. The paw that is to be lifted can be determined by scratching one side of the spine. You can make the dog alternate from one foot to the other by merely swift by changing your tickling from one side of the spine to the other. If, however, you tickle both sides at once, you get an interference and it is quite likely that the dog will not raise either paw."—Morgan Gililand. *An Introduction to Psychology*, p. 49

were awakened in a state of doubt will disappear and the right ones appear "When in trying to solve any sort of problem, you find yourself in a rut, about the only escape is to back off, rest up, and make an entirely fresh start"* Teachers should not keep on confounding boys when they find that the latter have gone on the wrong track When a child is again and again failing to get the proper answer of a particular exercise in mathematics, let him leave the work, and do something else or play. Then let him take the task up He will do better then.

In this connection let us emphasise the importance of *auto-suggestion* Just as auto-suggestion is responsible for many of our victories or failures in life, so too is it true in the case of any one of our mental acts "He can who thinks he can" We have to realise the truth of this proverb in the case of remembering To have confidence in one's powers is to win three-fourth of the victory. The easy and confident mood wards off all doubt and distractions Then the works proceed on smoothly "In extempore speaking go a head *confidently*, avoid worry and self-consciousness, and, full of your subject, *trust* to your ideas to recall the words as needed Once carried away with his subject, a speaker may surprise himself by his own fluency"† The writer knows many students failing in examinations not due to lack of knowledge but due to lack of confidence.‡

*Woodworth · *Psychology*, p 356

†Woodworth *Psychology*, p 356

‡The writer particularly remembers the case of a lady who was much above the average in intelligence and worked hard to pass a degree examination. But as she used to reach the examination hall, she would get nervous and all her ideas will evaporate out of her brain, at times she would collapse so entirely that she came out of the hall half unconscious On the other hand there are cases of students who read very little but find their names pretty near the top in the examination results Their success mainly depends on the training of their emotions and a cultivation of a general healthy out-look on life Students should be taught to trust themselves and their powers

RECOGNITION

Recognition as the word suggests is knowing the object again. The object present to consciousness is characterised by the awareness that it is known a second time. There are degrees of recognition. "At its minimum it is simply a feeling of familiarity with the object, at its maximum it is locating the object precisely in your auto-biography"* Thus complete recognition requires localising what is recalled or known in one's past experience.

A person's power of recognition is much larger than his power of recall. We may not be able to recall the original setting in which a particular experience occurred and yet may be able to recognise it. We see a man and know that he is so and so, though we may not be able to recall when we saw him before or how we come to know him. The baby recognises persons though it may not develop the power of recall. The recognition vocabulary of any person is always much greater than the number of words we use in speaking or writing. We recognise names that we can not recall.

We can recall an experience when it is deeply impressed in the mind and tied with many associations. This is not necessary for recognition. A feeling of familiarity is created by noticing a thing even once. The child's power of recognising words and objects develops by the casual impressions it receives. This creates the apperceptive mass which enables him to understand new situations. To test a child's memory we should not only measure his power of recall but his power of recognition also. In the past memory training consisted mainly in developing the power of recall. Little attention was paid to developing his general apperceptive mass. Hence the tests also

*Woodworth : *Psychology*, p 357.

tested the power of reproducing what is learnt. This promoted rote learning. The real capacity of a person could not be judged, for in such an examination the rote learner can secure as high marks as the person who has understood the subject and has a vast apperceiving power. The new type of examination, tests the recognition power of the child, hence it tests his power of apperceiving new situations. In life it is the latter that counts for success more. The student who has read twenty books may not be able to secure such high marks as the one who has mastered or crammed one text book. But in the long run the former student will do far better. He cannot recall many ideas but he is familiar with a very larger number, this will enable him to judge aright in many trying situations.

OBLIVISCENCE AND REMINISCENCE

Forgetting is usually due either to lack of interest or lapse of time. Experiments have been performed to measure obliviscence as it occurs with lapse of time. Ebbinghaus is the pioneer of the movement in making such experiments. He used non-sense syllables for his experiments in order to eliminate the element of interest. The result of the experiments show that after 20 minutes 72% of the material learnt is remembered, after one hour 44%; after 9 hours 36%, after 30 days 21%. Thus forgetting is most rapid immediately after learning. Then gradually the curve of obliviscence gets flat and never reaches the base line. So there is something retained in the mind for all time. Our memory of a mental event is never altogether lost. From this two conclusions follow :—

1. Revision of a thing is most economic in memorising it immediately after the material is learnt. We should

make children recapitulate what is learnt immediately after they have finished learning

2 We should never think that if the child cannot remember a fact it is altogether lost from the mind. The forgotten fact, as James points out, may still count, it has a power of colouring or characterising future experiences.

Along with obliviscence that takes place with the lapse of time, reminiscence also takes place. Ballard's experiment shows that more is recalled after two days than on the same day. He gave a large number of school children 'the Loss of Royal George' by Cowper to be committed to memory. They were allowed 13 minutes to learn it, after which time the books were collected and they were asked to recite the poem. One boy was able to do the whole of it, i.e. 36 lines and the average number of lines for the class was 27.6. After two days he again visited the school unexpectedly and the boys were asked to write down the poem. Eight of the boys wrote out the whole poem correctly and the average number of lines for the class was 30.6. This experiment seems to contradict the conclusions with regard to obliviscence arrived at by Ebbinghaus viz that forgetting is most rapid immediately after learning. But actually, however, it is not so. The children appearing in the test of Ballard had the opportunity of recapitulating the material learnt in the very course of the first test. When they appeared for the second test they had already the advantage of once recapitulating the material which they were asked to reproduce after a lapse of time. Now in the case of reminiscence, it is true, when we remember the poem learnt a second time some new elements are revived which did not come to consciousness when remembering was attempted the first time. Hence it was possible for eight boys to remember the entire poem and for the class to raise the average score from 27.6 to 30.6.

IMPROVEMENT OF MEMORY

In the light of what is said above we may now again review the question whether we can improve memory by conscious efforts. The people in the past believed that memory is one of the faculties of the mind and its general improvement may be helped by exercising it in any special direction. Sir J. G. Fitch says, "So it would train my memory if I learnt the leading article of this morning *Times* by heart, or the names of all the senior wranglers from the beginning of the century." Such a view is the origin of the theory of the formal training. The minds of the students were 'stuffed' with much useless matter in the belief that they develop a supposed power of the mind. The experiments of modern psychologists, Thorndike* and others, have exploded the truth of this theory. For instance one who has committed a number of poems to heart may find some ease in committing to heart a new poem also, but it will not help him in committing to memory some formula of Chemistry or other scientific facts. The possibility of improving memory through training is discussed in the wider problem of *Transfer of Training*.

According to the theory of Thorndike, known as Common Element Theory, one learning helps in memorising another only in so far as the second contains elements that are common with the first. It in no way helps the memorising of dissimilar facts. Now it is generally recognised as Raymont points out, that "improvement of memory is to be sought, not in rote learning but in clear thinking, orderly arrangement, lively interest and close attention."* The interest with which a thing is learnt and the formation of the associative links among the ideas of the mind determine recall. Interest very much depends upon apprehension of the meaning. It has been found that passages with meaning are learnt much more rapidly than nonsense syllables. The former also get

knot together with other ideas of the mind. Hence apprehension of meaning is a great aid to memory. In order that a fact may be well remembered by the boys, the teacher has to create interest in it, explain its meaning fully to them, associate it with a number of other facts.

METHODS OF MEMORISING

The usual method that a school boy adopts for learning a subject is of committing it to memory by rote. Teachers in the past encouraged it, but this method is really a bad one. It is bad because the newly gained experience is not woven into the texture of our consciousness. Associative links are not formed between the new idea and the old ones. This is done by reflection, that is, by comparing one idea with another, contrasting it with a third and assigning it a place in our mental system. Repetition to some extent deepens impression, hence it is a factor in recall, but the more important factors are *interest* and *associations* that exist between one idea and another. Rote learning kills interest and so there is a great expenditure of mental energy required in learning. Further, in order to recall an idea to mind it is necessary that it should have been previously associated with other ideas, for, these latter serve as promptings in recalling the idea learnt.

Various systems of *mnemonics* have been devised by people to help memory. Dates are learnt by making letters stand for figures. Thus the word 'sharp' is made to stand for the year 1649—the year of the death of king Charles I of England. Here 's' stands for 1—'h' for 6; 'r' for 4, and 'p' for 9. Vowels have no meaning but they are added to make a suitable word which by its meaning would help in reminding of the event of the death. 'Sharp' here reminds us of the sharp weapon used for beheading the King Charles I. This may remind children of his death. Similarly scientists devise their own *mnemonics*—

the word 'vibgyor' is made to stand for the seven colours that constitute the ray of white light

All these, however, are mechanical aids to memory. The best mnemonic is really the *scientific methods of studying a subject*. When a new experience classified and arranged in a particular order, is found out as an instance of a general law, then it is easily recalled

METHODS OF MEMORISING A POEM —We have pointed above that repetition helps memorising. Repetition has in its favour the factor of frequency. Hence one of the methods of learning a poem or a connected prose piece is to repeat the poem or the piece as often as possible. The vocabulary of a new language is also often acquired in this way. *Distributed repetition*, however, is to be preferred to continued repetition for a long time. Learning, that is to say, should be *Spaced* rather than *unspaced*. Experimental evidence goes in favour of the former method. The adjoining table gives the conclusion of Jost* with regard to his experiment on spaced and unspaced learning

SPACED AND UNSPACED LEARNING

Distribution of 24 readings				Total score of B	Total score of M.
8 readings a day for 3 days				18	17
6	"	"	4	39	31
2	,	"	12	53	55

Here the widest distribution gives the best result. This is due to the fact that the factors of *recency* and *interest* are on the side of spaced learning rather than unspaced learning. Continued repetition makes the work boring, the interest is killed and attention flags. Hence learning becomes slow and requires more energy. Then in spaced learning there is the advantage of

*Woodworth: *Psychology*, p 342.

freshness One can always learn better when one is fresh than when one is tired. We have to take another fact into consideration also. Spaced learning gives *time for the assimilation* of the subject matter learnt. The nerve tissues grow to the *modes* in which they are exercised. This fact itself accounts for speedy learning through the spaced method.

MEASUREMENT OF INDIVIDUAL RETENTIVITY.—

Various experiments have been made in modern times to test the retentive power of individuals. Usually non-sense syllables are employed to test it. These are learning and saving method, prompting method and scoring method.

In the *learning and saving method* certain number of non-sense syllables are shown to the person and then he is asked to recall at once. Any time saved indicates the time saved in learning them. In the *prompting method* after some syllables have been read by a person a number of times, he is asked to recall them. Promptings are given whenever he fails in recalling the syllables. In the *scoring method* the syllables are put in rhymes. It has been found that the prompting method is the most efficacious one in retaining impressions. It surely helps recall better. We become efficient in doing the thing that we practise. In learning by the prompting method, we are required to practise the very same kind of activity that would be required at the time of the final recall.

LEARNING BY WHOLE AND PART METHODS —A poem may be learnt by one of the following methods—*the entire method, the part method, and the mixed method*.

The entire method is used when one tries to learn the poem by reading the whole of it at a time, whereas in the case of part method one tries to learn it stanza-wise. The merit of the entire method consists in the fact that

the last word of the first stanza becomes connected with the first word of the next. The mind therefore easily passes from one stanza to another in the process of recalling it. Moreover the connected sense of the whole piece also helps in recall.

Let us take the following three stanzas of a poem—

Is thy cup of comfort wasting ?
Rise and share it with thy friend,
And through all the years of famine
It shall serve thee to the end.

Love divine shall fill thy storehouse,
Or thy handful still renew ,
Scanty fare for one will often
Make a royal feast for two

For the heart grows rich in giving ,
All its wealth is living gram .
Seeds which mildew in the garner,
Scattered fill with gold the plain.

It is necessary in order to recall the poem that the word "end" of the first stanza should naturally remind "Love" of the second, similarly "two" of the second should remind "For" of the third. In the *entire or whole method* this naturally happens as these words become associated with each other by contiguity. This does not happen in the case of the *part method*, which consists in learning a poem stanzawise.

In the case of this method the last word of a stanza, by the law of contiguity, gets associated with the first word of the very same stanza. It then becomes difficult to cut off this association and substitute a new one in its place. The 'entire method,' however, is useful only when the poem is not very long. There is another disadvantage

from which it suffers. It lacks the incentive which one gets from appreciating one's own success in mastering a certain part of the poem. If the poem is committed to memory in parts, the appreciation of partial success by the individual will itself lead him on to continued effort.

The Mixed Method is a combination of the entire method and the part method. In some cases this method has been found to be the most useful. A stanza may be committed to memory and then one may proceed on to the next, after it the two stanzas may be read together and thus the whole poem may be learnt in this way. But very often this involves the repetition of easier portions hence there is needless loss of time. The second form in which this mixed method is used is that of reading a poem up to the place where the difficulty occurs, then to master this difficulty by repetition and then proceed on further with the previously learnt part.

An oft-quoted experiment by Pyle and Synder may be cited in this connection. A young man took two passages, each of 240 lines, from the same poem to be memorised one by the part method and another by the whole method. He worked for thirty-five minutes each day. In the case of one passage he took 30 lines per day to be memorised and then the whole was reviewed till it could be recited. In the case of another passage 3 readings of the whole poem were made per day till it could be recited. The time spent in the first case was 431 minutes (distributed over 12 days with 39 minutes work), while the time required to learn by the second method was 348 minutes (distributed over 10 days). Thus we find eighty-three minutes were saved by the second method, that is, there was a gain of twenty percent by the whole method as against the part method. The factor of meaning and interest are on the side of the whole method, besides having the advantage of proper associations.

LEARNING BY RECITATION METHOD — Learning with the help of recitation brings more profitable results than without recitation. One should give a part of the time to go through mentally what one has learnt before taking the next item to be learnt or continually repeating the matter without reviewing one's achievement. This fact has been experimentally established. Recitation brings encouragement. It practises one in the act of recall which is the main purpose of learning. One knows where one's weakness lies and tries to master the points where there are lapses. Self-assurance which recitation brings removes the element of uncertainty lingering at the time of recall.*

ABNORMAL FORGETTING

Forgetting has been usually thought of as due to the fading away of impressions received from experience of reality. It is due to lack of interest. Psycho-analysts, however, have brought in a new theory to explain some peculiar phenomena of forgetting which could not be explained by the old theory of fading away of the impressions or loss of interest. Forgetting may not be always due to lack of interest in the forgotten material; there may be ample interest in it, yet due to the inward working of the mind the material may not come upto consciousness when required, that is, there are several cases of active forgetting or managing to forget in our life.

Usually we are unable to distinguish these from those cases where sheer obliviscence or lack of interest is the cause. Psycho-analysis deals mainly with abnormal

*"Forgetting is slower when relationships and connections have been found in the material than when the learning has been by rote. Forgetting is slower after active recitation than when the mere passive receptive method of study has been employed. Forgetting is slower after spaced than after unspaced study, and slower after whole learning than after part learning"—Woodworth-*Psychology*,

cases, but it is these cases that help us to understand the nature of the process that goes on in the normal mind. For psycho-analysis the difference between the normal and the abnormal is only relative, for every one of us in certain circumstances behave as abnormal beings. But we seldom become conscious of our abnormalities as we always try to rationalise them.

In cases of abnormal or significant forgetting, there is interest in the forgotten material but it lies in its not being recalled to consciousness. Here it is the unconscious that withholds the material. Very often the conscious thought of a man deceives him with regard to his real inclinations. Similarly his conscious behaviour may be highly deceptive to others. For instance a man may be very particular in showing all due formality of respect to his superior officer, yet if he really hates him, he would make mistakes or forget to do certain things that would annoy him or would mean disregard of him. In this way many slips and omissions are made by us. The unconscious would not be compelled to do things which it dislikes. The conscious mind of the man does not know the cause of these, when an explanation is asked of his mistakes, he rationalises the acts. In cases of abnormal forgetting, it is a hidden desire that becomes active and causes the phenomena of obliviscence.

A few illustrations, perhaps, will make the matter clear. Supposing you are going out for a walk, a friend of yours hands over a letter to you to be dropped in a letter-box that you may find on the road. Now supposing you love to do the service to him, then surely you will remember the posting of the letter, though you may be talking with others on several subjects and the idea of posting the letter may be quite out of your mind till the letter-box-stand comes. But in case you grudge the service, and have simply accepted to do it for the sake of formality

or decorum, the chances are that you will forget to do the work. The letter may be handed over to you by one whose annoyance may mean much if he came to know that the letter was not dropped in the box. Yet if the unconscious grudges the service a sudden obliviscence comes on you *

Persons who have a sense of their own superiority forget many points of courtesy which they are required to do to their superiors in social status, for instance, saluting properly or standing up. One can find out the inward

*The author noted a case of abnormal forgetting. It is fresh to memory. Once I sent my ward to a school to enquire of the address of a student who lives at Gorakhpur. He was told clearly to whom he had to go and what his mission was. He remembered it well till he entered the gate of the school. When he reached the class in which the student read he found that he had forgotten the name of the student. The class was just then, dispersed. Then he went to the lodge where the student was expected to be found. To his disappointment, he learnt that the boy had left that lodge. Just then the name came to his consciousness. But he returned without fulfilling the mission.

In this case, the subject did not really want to go out. I learnt that he was busy in solving his problems on Mathematics and my asking him to go out surely was an interruption to his studies. But as he did not like to refuse going, he went to the school, all the while thinking of the name of the boy but forgot it when the moment came when he should have remembered it.

In another case a very conscientious person and one reputed for his punctuality forgot to come in time to a meeting of which he was the president. He told the audience that he was sitting in the hall where dramatic performances were going on. There was not enough light at the place where he was sitting, hence he could not ascertain the time by his watch. He also said that it was for the first time that he was unpunctual. The writer, too, was present in the meeting and this last remark at once made him look for an explanation of the unusual phenomenon. In course of time it came to light that the president had no inclination to be present at the meeting. He was compelled to do so due to circumstances which would have made his position awkward had he been absent. The speaker, who was to address the audience that day, had views on the subject on which he was to speak, that were not quite palatable to the president. Further he had been invited to speak without the knowledge of the man who was to preside. Yet the presence of the president was necessary to show honour to the speaker. Hence arose the mistake as well as the tendency to rationalise the act.

working of a man's mind by the omissions he makes even as we can do so by his commissions. Freud cites the case of a lady who forgot absolutely the face of a man whom she intensely loved formerly and who had not responded to her love. Here the abnormality is marked—it was caused by the hidden complex of hatred whose coming to the conscious plane would have been unbearably painful.* The phrase "managing to forget" is very significant of the nature of the phenomena of abnormal forgetting.

How the emergence of an idea to consciousness is prevented by the unconscious is known from the cases of psycho-analysis in which Jung used his "word association-method." The subject is given a word and he is asked to tell whatever immediately comes to his mind. There is a stopwatch which regulates the time. In normal cases the usual associations with the word call up to the mind within the prescribed time. But in abnormal cases there is delay and the usual associations do not come up, that is, there is active withholding of an idea from coming to consciousness. When the subjects have been further analysed by the clue thus supplied, it was invariably found that there was "a repressed feeling or a complex which prevented the working of the normal association."

Here is an example from Jung and Peterson

The stimulus word, the responses given and the times are noted below,

*Blindness may be caused by a repressed complex. Dumville cites an example where the repressed complex brought about blindness. "It is said of a man who came to hate his wife intensely, but who in his conscious life was too much influenced by the desire of appearing respectable to think of divorce or separation, that he actually became blind. This was the only way the Titan could find after a long struggle of banishing from sight the hateful creature." Here the repressed complex brought about a bodily disablement. Mental disablement in the form of amnesia would similarly occur when the repressed impulse is very strong. Dissociations of personality also occur due to the same cause. They are but extreme cases of forgetting.

Stimulus word	Reaction word	Time in seconds
1 Head	Hair	1 4
2 Green	Meadow	1 6
3 <i>Water</i>	<i>Deep</i>	5 0
4 Stick	Knife	1 6
5 Long	Table	1 2
6 <i>Ship</i>	<i>Sink</i>	3 4
7 Ask	Answer	1 6
8 Wool	Knit	1 6
9 Spiteful	Friendly	1 4
10 <i>Lake</i>	<i>Water</i>	4 0
11 Sick	Well	1 8
12 Ink	Black	1 2
13 <i>Swim</i>	<i>Can Swim</i>	3 8

Now the stimulus words 3, 6, 10, 13, get lengthened reaction time for response, and there is a peculiar response for 13

The delay is due to a complex which is connected with water. There is a desire to withhold the response which might give clue to the inner desire. Sometimes such responses are given as are absolutely disconnected with the normal associations of a word. The giving of a stray response shows that the normal associations, determining recall, are not working. In the normal course things are called to the mind which are related to the stimulus word either by way of contiguity, similarity or contrast. Where none of these exist the suspicion is roused that there is active forgetting or the normal idea is being withheld. In such cases the subjects are hypnotised and the exact nature of the complex is ascertained *

*Here is an example of active forgetting cited by Dumville from 'the Value of Psycho-analysis to Education' by Mary Chadwick in which the abnormality is very much pronounced

"A little girl of nine had grave difficulties in acquiring the French language and seemed quite incapable of remembering any rule for the

The great achievement of modern psychology consists in showing the fact, that memory is no mere mechanical process and that much depends upon the conations and the affections of a man. A disturbance in the conative and affective life leads to disturbances in memory or brings about forgetfulness, whereas if there is harmony in our mental life there will not be abnormal forgetting and memory will prove serviceable to the ego or the dominant personality.

formation of the plural. It must here be mentioned that she had a little brother about four years younger than herself. Until his arrival, she had enjoyed the entire attention of her parents, and perhaps rather more than usual, having been a delicate child. This little brother had been a quite amusing child, his sister's double and staunch ally, doing all she wished, following her lead in every possible way. But during that summer his attitude changed, a greater independence asserted itself, and instead of being his sister's shadow, he established himself her rival for the admiration, applause and love of relations and friends. What is still more interesting, at the time when the French difficulty was at its height he manifested this rivalry openly, by asking guests assembled for a luncheon party, whether they would prefer wine from a bottle marked with his or his sister's name, when he was playing with a toy railway-station refreshment trolley. All this time the little girl was sleeping badly and her emotional state was seriously disturbed. Presently she volunteered information about her dreams which was all too significant. She frequently dreamt that all her friends and relations were dead and she alone left alive. Here the psycho-analyst learnt the secret of the impossibility to form a French plural. The child wanted *no plural*, other people were distasteful to her—dead—which to the child mind means gone away—only she herself was to be left, *the singular and first person at that*."

The knowledge of such phenomena is of very great value to a teacher. Very often the difficulty in learning a subject is not the difficulty of the subject but it may be due to the formation of certain complexes. It may be due to unsympathetic treatment of the child by the teacher, or due to a poor opinion of the teacher himself or a positive hatred against him. Pfister says, "It often happens that an aversion to a certain subject or to several of them can be removed by analysis. One boy was not able to learn mathematics and languages because his father kept insisting that he should study them, but in natural science and manual training which in his case were associated with his mother he did excellent work. In uncovering the father-complex, psycho-analysis enlisted the excellent abilities of the boy in the interest of the formerly hated subjects"—(Quoted by Dey *Man's Unconscious Conflicts*—Pages 278)

Such phenomena point to the clear duty of the teacher to see that unpleasant associations do not develop in the mind of the child. The child is likely to forget to prepare the task given by a teacher, who has no affection for him or who is not liked by the child. Feelings guide remembrances, and the child is likely to do nothing that will please an unsympathetic teacher. It has been seen that when a child has forgotten his exercise book, the reason is usually to be found in the fact that perhaps the work has not been done to the entire satisfaction of the child. Had a spirit of encouragement been kept up such forgetting would not have occurred. Lessons that are associated with pain are forgotten for that reason soon. Consciousness cannot bear the idea of pain. Hence all that is connected with it is forgotten whatever be the amount of repetition that may have been done by the child.

Hence the teacher ought to make his teaching pleasant if he wants to make it of lasting value to his students

References —

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2. Thomson · *Instinct, Intelligence and Character*, Chap XIV.
- 3 Woodworth . *Psychology* Chap XIV.
4. Dumville · *Fundamental, of Psychology*, Chap X.

CHAPTER XVI.

THINKING AND REASONING.

In the previous chapters we have outlined the various forms of cognitive activity of the human mind and we have tried to show how they can be developed among students. In the present chapter we are concerned with the highest form of this cognition which is known as thinking and reasoning

NATURE OF THINKING.—Thinking in widest sense of the word involves all forms of cognition whether perceptual, imaginative or conceptual But in a restricted sense thinking refers to only the ideational activity of our minds. It may be carried on with the help of distinct images or it may be without them. When we think with the help of images we usually call the activity imagination, when we think with the help of concepts as designated by words the activity is named as pure thought. Both kinds of activities, however, are designated as *thinking* when they result in the solution of some problem.

Thinking is an activity of the mind that prepares us in advance to meet a situation. This is necessary even for observation and perception. What a man perceives and what he observes is very largely determined by what he has been thinking, "Thinking", say Gault and Howard, "is attentively analysing and arriving at an interpretation of an object or situation with which we are now confronted or which we anticipate, and mapping out a course of action with reference to it."

Man is superior to other animals in his capacity for better thinking. He, through his power of thought, is able to visualise the possibilities of any course of action and he adjusts himself to the coming situation accordingly. Animals learn all the time through actual trial and error. Man makes trial and error at the ideational level, since he has the capacity of superior thought. It is the main purpose of education to develop in the mind of the child capacity for independent thinking. Our activities are governed by our thoughts, and the clearer a person thinks, the more refined and prudent are his actions.

TYPES OF THINKING

(1) *Associative thinking* —This is to be found among children and undeveloped men. Even animals may be credited with having this type of thinking. The associative thinking consists in the reawakening of a system of ideas which were associated together before due to actual experience. It is a type of conditioned response. The burnt child dreads the fire. Here associative thinking works. The sight of the fire awakens the experience of pain in his mind and so he refrains from approaching fire. The child, when late to school, fears to be rebuked, it is due to associative thinking. The original experience is reawakened when a suitable stimulus is supplied.

Some people believe that even higher animals are capable of associative thinking. Thus dogs do right actions at the bidding of their masters. But they are so trained to it. A particular systems of signs awaken a particular set of experiences in their minds and the whole thing works off automatically. "Thus our associative thinking follows the lines of past experience and learning, it is in a sense governed by *habit*."*

* Gault and Harward : *An Outline of Psychology*, P 231

(2) *Conceptual thinking* —The real difference between animal and man lies in man's having the power of conceptual thought. Conceptual thinking consists in making use of concepts. A concept is a meaning and has many relations. If the child fears going late to the school because he was punished for it he has done associative thinking, but if he refrains from doing a similar act which might annoy the teacher, he has done conceptual thinking. The movement of thought in associative thinking is from A to B and B to C as originally connected. In conceptual thinking, there is no direct approach from one idea to the other. There is an intermediary process of discovering a clue which might lead one from the problem to the solution.

In conceptual thinking the situation that provokes thinking is complex and the solution too is difficult. To understand fully its nature, we must first try to understand the nature of concepts, and judgments with the help of which conceptual thought proceeds.

THE NATURE OF A CONCEPT

A concept is usually defined as the name of a class of objects or their common qualities. Thus "horse" is a concept, so is "redness" and "colour". "Horse" is the name of a class of animals, "redness" the name of a quality found in common among many objects, and "colour" comprehends a complex notion of a number of qualities. The basis of concepts are perceptions. Percepts refer to individual things, concepts to classes of things.

A concept is not, however, some hypostatized entity existing in the mind. Concept is a system of meaning. "To conceive an object is to apprehend it in its relationship to other facts of experience. We have a conception of radium when we can tell something about its qualities as

a substance, the peculiar phenomena which it manifests, its place in the scientific scheme of things. We know it as a substance among other substances, its phenomena as related to other physical phenomena. To *conceive a thing is to know it in all its relationships*. It is the relational aspect of the objects that comes to the face when we discuss conceptual thought about them.”*

The Purposive Character of the Concept —A concept is an instrument of thought whose main character is to serve a purpose. Hence the meanings of concepts differs from individual to individual according to the purpose in hand. “What is a conception. It is a teleological instrument. It is a partial aspect of a thing which for our purpose we regard as its essential aspect, as the representative of the entire thing. In comparison with this aspect, whatever other properties and qualities the thing may have are unimportant accidents which we may without blame ignore. But the essence, the ground of conception, varies with the end we have in view. A substance like oil has as many different essences as it has uses to different individuals. One man conceives it as combustible, another as a lubricator, another as a food, the chemist thinks of it as a hydro-carbon, the furniture maker as a darkener of wood, the speculator as a commodity whose market-price to-day is this and to-morrow that. The soap-boiler, the physicist, the clothes-scourer severally ascribe to it other essences in relation to their needs”†

Anticipatory character of the Concept —The above truth is brought home in another way by pointing out that concepts are anticipatory in character. They have a future as well as a present reference. When we see the knife and call it sharp, we are thinking that it will cut,

*Gault and Howard: *An Outline of General Psychology*, p. 27.

†James: *Principles of Psychology*, Vol. II. p. 325.

when we say it has a beautiful handle we are thinking it as a precious possession to be displayed before others. We think of things in terms of their use and future possibilities for us.

KINDS OF CONCEPTS —We may distinguish two kinds of concepts—*class concepts* and *abstract concepts*. Besides these some people have called particular objects of sense or percepts also as concepts. Class concepts are the most universal and familiar, the concept of a chair, a book, a plant etc. are class concepts. They are generally speaking concrete. They denote classes of things that may be perceived. They were called by Locke “general ideas”.

Abstract concepts may be either simple ideas of a single quality found in common among many objects, or they may be denoting a complex group of qualities. ‘Redness’ belongs to the former class, and ‘virtue’, ‘justice’ belong to the latter class. Dumville has called the former ‘*abstract ideas*’ and the latter ‘*generic ideas*’.

FORMATION OF CONCEPTS.

The child forms concepts through abstraction of common qualities and a synthesis of them so as to create a new meaning. The child begins to have concepts before he is aware that he is having any. The growth of concept is the growth of meaning attached to a particular object of thought. When a child observes different kinds of dolls and notes that they are all called by a particular name, he forms the concept of the doll in general. He was previously aware of his own doll but seeing other dolls, he finds that though they differ in many ways they are all called by the same name. Further, for the child they are all things to play with. This common quality is abstracted by the child unknowingly and the concept of doll thus stands for any thing that can be played with.

The concepts of simple qualities likewise come through abstraction and comparison. Thus the concept of *black* comes as a result of observing many black objects and comparing them with those having other colours. Here we find, as in the previous case, the analysis is followed by synthesis. Blackness is observed and analysed as it is found in different objects by abstracting it from other qualities and then it is designated by a name.

THE CONCEPT OF NUMBER —The concept of number illustrates in full the various mental operations as they are gone through in the formation of concepts. Let us examine it in some detail.

The concept of number is an example of abstraction done with the gathering of experience. The first requisite is the use of words. The actual use of words very often precedes the acquisition of the concept which the words denote. The child learns to say *one, two, three, four* first by imitation and often without attention to objects being counted. Then he gives attention to the objects and numbers form a part of their connotations. After a large amount of experience he no longer pays attention to the things counted but attends to the idea denoted by the words. Thus he gets abstract ideas of number.

Here the essential step in arriving at abstract notions is comparison. He notices different objects bearing likeness in some respect. He isolates the varying concomitants. The use of words helps in this process of isolation or thinking of one quality apart from the rest. The greater the variation of objects counted, the more easy would it be for the idea of number to emerge to consciousness.

There are two fundamental modes of comparison on which idealisation depends—*the method of difference* and *the method of agreement*. The former draws attention

to a peculiar quality by the fact of its being uniquely present in certain things only, whereas the latter makes possible for us to concentrate attention on a quality because it recurs so often. It is through such comparison that all abstract ideas—such as ‘courage,’ ‘candor,’ ‘dignity’ etc are built. The teacher who wants to help his pupils in arriving at abstract ideas has to make use of both the methods. Thus in enabling children to form a clear idea of porous substances, the teacher will take two kinds of substances—those that suck up water and those that do not—say, a piece of chalk and a piece of stone. After this he may take many substances that are porous—blotting paper, lamp-wick, sponge etc and make the children note the quality in which they are alike. This will enable them to have a clear idea of *porosity* of substances.

In the beginning the teacher has always to enable the child to take help of the concrete to arrive at abstractions. Without the concrete the abstraction would mean nothing, the word denoting the concept would be an empty sound. But as the child grows and his concepts develop, the abstract ideas themselves ought to be regarded as concrete facts. Human mind is ever ascending into higher and higher abstractions. Thus ‘yellow,’ ‘blue,’ ‘red’ are abstractions from actual objects, ‘colour’ is more abstract than ‘yellow,’ ‘blue,’ ‘red’ etc. The higher the abstract idea the more comprehensive will it be. Thus ‘quality,’ comprehends colours and other qualities. The teacher should not unnecessarily take the child to the concrete when he can grasp abstract concepts.

ABSTRACT IDEAS OF RELATIONS —To arrive at the abstract ideas of relations is much more difficult than to arrive at the abstract ideas of qualities. In the latter case there is something on which attention is fixed. ‘Whiteness’ and ‘greenness’ are available to perception as white and green objects. But relations as ‘higher’ and

'smaller' are not available to such perception. The same thing may be big or small as it is apprehended in relation to other things, whereas the same thing cannot be green and blue at the same time. Again relation requires forms whereas qualities are absolutely abstracted from the objects in which they inhere. Hence ideas of relation develop in the child later than abstract ideas of qualities.* Among less civilized people there are no words for many kinds of relations, this shows that apprehension of these relations requires a more developed state of the mind. The teacher has to be very careful in communicating to the child ideas of relations. He has to take many concrete instances in order that the relations may be grasped by the child. They ought to emerge to his consciousness out of his own thinking upon the experienced objects. Such ideas as 'ratio', 'proportion' are grasped by the child only by working many sums involving ratio and proportion. The teacher's skill lies not in telling the relations as they exist in two forms but in making children discover the relation for themselves. The teacher has to give the name.

THE IMPORTANCE OF WORDS — Words stabilise the concepts and make them available for future use. Most psychologists agree with regard to the fact that thinking cannot get on without the help of percepts, images or words. Some psychologists believe that thought may go on without images or words, but this does not minimise the importance of the use of words in the early stages of thinking. Accord-

* "The child learns to say 'This apple is bigger than that one,' 'My father is bigger than my mother,' 'The dog is bigger than the cat' and the meaning of the word *bigger* becomes gradually clearer. But it is perhaps never so clearly separated in thought from the context in which it occurs as *white* and *black* or similar other abstract ideas can be. The very form 'bigger' demands some words at each end before one thinks of definite meaning, while such words as *white* or *black*, though of course, equally artificial in reality when used alone, calls up a definite meaning even without context. This difficulty in the way of complete abstraction is not surprising when it is remembered that a relation only holds between two or more terms and it ceases to exist if terms disappear"—Dumville. *Fundamentals of Psychology*, p. 135

ing to Max Muller, there can be no thought without language. Hence the better the mastery over words, the more stable would be the concepts of a person. Clarity in speech brings clarity in thought. If we want to have a thorough grasp of a subject we should express it to others. This necessitates the use of accurate language which in turn brings accuracy in thought. When boys are required, through questions, to give a connected account of their experience they are forced to systematise their thinking and make their concepts clear and accurate. "A person who uses languages freely and well is one who has a free flow of thoughts. His language, indeed, as expressed either in speech or books, is the chief, often the only, means whereby we become acquainted with his thoughts"*

Primitive people have very few words to express their thoughts, civilized people make use of a large number of words. "The history of the development of the language of the race is the history of the growth of the intelligence. Man's superiority over the lower animals can be explained almost completely on the basis of language. Language keeps pace with the growth of civilization. The same is true in the life of the individual. At first the infant deals only with the concrete, later, with ideas and language. Education consists to some extent in the growth of language habits. *The best single measure of the intelligence of an individual is the size of his vocabulary*"† Nations that are advanced in thoughts have large number of words to express them. If the size of the vocabulary of any language is small, it shows the people speaking that language have not thought of many things which other people have thought. They are at a low level of ideation and thus are less civilized. It is pointed out by William James that nations that have no words to express certain virtues do not have those virtues.

* Dumville. *Fundamentals of Psychology*, p. 127.

† Morgon and Gilliland. *An Introduction to Psychology*, p. 283.

JUDGMENT.

NATURE OF JUDGMENT —When one idea is referred to another in thought the result is a judgment. The ideas may be concrete or abstract. The whole of the process of forming concepts involves making of judgments, conversely concepts make judgments easy and significant. Such statements as 'the cow is black,' 'the grass is green,' 'the wall is white' are called judgments. They express a relation between two ideas, one concrete and the other abstract. The child is making judgments from the time he begins to frame abstract ideas. "Indeed concepts and judgments are different aspects of the same process. The forming of concepts itself involves judgment, whether expressed or understood, and, conversely judgments always involve the use of some previously formed ideas."* When we think of the result of the process of cognition we use the term conception, when we think of the act itself we call it judgment.

Judgments make our ideas clear. If the idea refers to a particular object, the child gets better knowledge of it through description of the object in a series of judgments. Judgment in its initial stage is an act of discrimination of an object from other objects. The vague and indefinite knowledge is made clear and definite through the process of *discrimination* required in making judgments. The latter process of thought—*apperception* and *association*, are also accomplished through judgments. The more we require a child to think about an object i.e. to form judgments, the clearer does his idea of the object become. Here language is of very great help. Children should be asked to describe an object they have seen or to explain to the class what they understand by a particular concept not merely because it fixes a certain amount of information

*Dumville *Fundamentals of Psychology*, p. 137.

in the mind, but also because it makes their ideas richer and more definite and fosters in them habits of carefully observing facts and properly understanding what they hear. We seldom discover our own ignorance about any subject till we are required to explain it to others.

RELATION OF JUDGMENT TO CONCEPTS —As a result of the process of judgment the concepts grow. By this process the qualities of an object are recognised. As experience grows we become aware of the presence of new qualities in the same object which we came across before. This in logical language means the *denotation* of the term remaining the same, its *connotation* has increased. Thus a child may know the *dog* as an animal to be fondled, but later, its fighting qualities or its power of catching thieves may become revealed to him. His conception of the *dog* has grown as a result of his making the new judgments. New meaning is added to the old concept. The concept some times gains in meaning due to the increase in the denotation of the term also. The child is familiar with only one kind of dogs say the puppy. When he finds that the greyhound and the bulldogs are also called dogs, new meaning is added to the old concept. This time the addition has come through the increase in the denotation. Education is a process by which the child is enabled to enrich his concepts, this is done both by his forming new concepts and by adding new meaning to old concepts through a series of judgments.

THE TEACHING OF DEFINITION —A definition is a judgment that explicitly states the connotation of a term. It is a result of examining many particular cases and clarifying one's concepts. It results in the growth of the concept. A new concept is a result of many acts of judgments. Children should not be fed up with ready-made definitions. A definition is of no value unless the person making it has had a full experience of all

things in question. He should himself recognise the propriety of the definition. Faulty definitions made by children themselves are better than perfect definitions given by the teacher. A definition should never come at the beginning of the lesson, it should come at the end. Examples should come before the rule and the particular before the general.

THE HERBARTIAN STEPS

The five *Herbartian steps* involved in teaching a lesson keep in view the fundamental principle that knowledge grows from incoherent indefinite mass to a coherent definite system and that concepts which the child himself forms alone are useful to him. Let us illustrate the procedure by an example from a lesson in grammar.

A teacher wants to teach an *adjectival clause* to the class. Now there must be some background for the communication of this knowledge. New ideas can be entertained only on the basis of old ones. The students are expected to be fairly acquainted with the analysis of simple sentences and with the function of different parts of speech in grammar. The teacher will take stock of this knowledge. The introduction of the lesson will consist of a few questions on the abstract ideas relevant to the subject in hand. This will, on the one hand, arouse the *apperceptive mass* of the students in their mind, and on the other, will assure the teacher that the boys know the preliminaries of the topic. This stage is technically known as *preparation*, for it prepares the minds of the students for the new lesson.

This will be followed by *presentation*. It will consist of writing examples of sentences containing adjectival clauses. He will side by side write on the blackboard simple sentences containing adjectives which have the

same meaning as the corresponding adjectival clauses. He may, for instance, frame such sentences —

1. A diligent boy is praised by the teacher The boy, who works hard, is praised by the teacher
2. Dishonest men suffer in the long run Men, who are dishonest, suffer in the long run

More examples of the above nature may be taken. The teacher will have to think out suitable examples beforehand and present them in graduated difficulty. Their arrangement will require skill on the part of the teacher.

Now the teacher will institute *comparison* between the meaning and the grammatical construction of the two types of sentences. The boys will see that though the two sets of sentences have the same meaning, the words which are used differ. The grammatical construction also differs. The students will then be asked to pick out the words that are common in the two sets of sentences and also those that differ but have the same meaning. This will lead them to the finding of the adjectival clause and its equivalent adjective in two corresponding sentences. As the students have already learnt to recognise an adjective, they will easily understand what work the clause presented to them does and how best to name it. The idea will 'roll out' in their minds. The boys know the work of an adjective, they will find out what work the adjectival clause does with the help of the above knowledge. This will lead them on to the definition of the adjectival clause.

The students will frame their own definition and the teacher will simply polish it up. This step is called *generalisation* which is a result of comparison of selected examples. Thus the students will have obtained a new abstract idea. They will have learnt the concept of an adjectival clause.

Now this concept has to be fixed in the mind and further clarified. This is done by asking students to pick out sentences containing the adjectival clauses and pointing out the words they qualify. They will be asked to frame sentences of their own to illustrate adjectival clauses. They may be asked to expand simple sentences containing suitable adjectives into complex sentences with adjectival clauses, or they may be asked to contract complex sentences with adjectival clauses into simple sentences of the same meaning. This stage is known as *application*. Its chief purpose is to clarify the new concept through use in different examples.

The child in course of arriving at the definition of an adjectival clause, has to form a series of judgments and make clear to himself a number of concepts. The definition is a result of such judgments. The concept thus becomes clear and gains meaning only through judgments. Thus judgments and concepts are intimately related with each other. The new concept is a result of the analytico-synthetic activity of the mind. The child had to abstract the common features in the sentences presented to him. He compared the two sets of sentences given at the preparation stage in order to abstract the quality in which the two sets differ. Then he had to connect this quality with the new concept. The result was a general proposition giving the nature of an adjectival clause. This was synthesis. The synthesis was fixed in the mind through application to new cases.

REASONING

NATURE OF REASONING —Reasoning is the process of thought by which the concepts that one has already acquired are made use of for explaining concrete situations. Reasoning assumes the existence of concepts and their interconnections, that is, a mental structure which is capable

of apperceiving new experience The higher type of mental activity has a dual aspect—either we are engaged in forming new concepts or in making use of the old ones The concepts, as they exist in our minds, are not isolated facts, they are organised in a system Now this system corresponds to the reality outside It is like a map of a country or a guide book The value of the map or the guide book lies in depicting in the abstract the conditions of reality as they are, so that we can make a ready reference to it to solve a new problem

TYPES OF REASONING —Reasoning may be *deductive* or it may be *inductive* Inductive reasoning aims at forming new concepts, deductive at their use in life situations Deductive reasoning is the easier one It consists in applying a principle to a given case Thus when we find a large number of spelling mistakes in the exercise books of the students, we infer that the teaching of English has not been methodical Here we proceed from the general law to the particular case. A doctor sees a patient with high temperature and calls it a case of malaria Again he has applied his generalisation to the particular case in hand

NATURE OF DEDUCTIVE REASONING —Deductive reasoning externally viewed seems to be a very simple affair But actually it is not so In the first place the difficulty lies in understanding the case itself The life situations, to which the deductive reasoning is applied, are very complex and one does not understand their true nature unless one possesses a large stock of ideas with the help of which the situation can be analysed and grasped by the understanding The cases that the doctor gets are very complex Fever, for instance, may be due to small pox, typhoid, malaria etc The doctor has to diagnose the disease properly He has to discover the clue which will lead to the solution of the problem. The peculiar symptoms of each kind of diseases have

to be searched. The validity of his conclusion will depend on whether the clue which he found out is the right one. An error in this will spoil the case. Experienced doctors easily detect the symptom of the disease and thus get at the proper solution soon. They may not have large stock of ideas, but their critical insight enables them to find the clue. Now this clue is the middle term of deductive reasoning. Having got it everything becomes easy.

Deductive reasoning may fail either for lack of ideas which explain the case in hand, or for lack of ability to discover the middle term or the clue. As the child's concepts develop his power of reasoning also develops. In order that he might explain a situation, he must have the apparatus with which to explain. But in most cases the difficulty in reasoning does not consist in the lack of adequate stock of ideas, but their proper selection. Just as a letter may not reach its destination because the postman does not know the place of the addressee and will not try to find it out, or it may be due to its being handed over to the wrong person, so too reasoning may be wrong for want of the proper concept or for want of proper apprehension or application of the concept. The second kind of wrong reasoning is more common. This is due to the lack of power of analysis. Thus the main difficulty of deductive reasoning, in fact of all reasoning, is the getting of the middle through analysis. Anything or any trait may be taken as the middle term, but only the one that will suit the case in hand is required. Here ingenuity and insight are greatly needed.

Let us take an illustration from Gault and Howard to explain the procedure in deductive reasoning. "Suppose, for instance, you now, for the first time, are faced with the necessity of showing that the interior angles of a triangle, taken together, are equivalent to two right angles. Most informally the novice may seize upon a try-try-again

(trial and error) method. He may even callow enough to cut off the three angles of a triangle, place the original axis together, flushed with the edge of a table top, and the cut off corners in contact, the first with the second and second with the third, to see whether the outside edge of the first and the outside edge of the third will coincide with the table edge. They do so, surely enough, but that is too crude. Another half-blind shot at it and the novice is 'completing the figure'. He remembers having seen his teacher do this sort of thing on many an occasion. While he is doing this he makes a very important discovery. He gains the essential insight into the situation. But before we go on to that let us point out that, to this point *analysis has been going on*—not so wittingly as unwittingly. And then the insight or discovery. 'This is just another case of a straight line cut by a transversal'. There is the middle term. There is a certain identity between the present situation and another that he has met hitherto. Here is where the memory function comes into the reasoning process. And now it is a case of parallels cut by a transversal, the conclusion comes with a flash. For it is recalled that in the analogous case angle 1 and 2 are equal, (see Fig. 5) that the angle 3 is equal to 4, that 5 is triumphant by equal to itself. That finishes it, if ABC is any triangle."

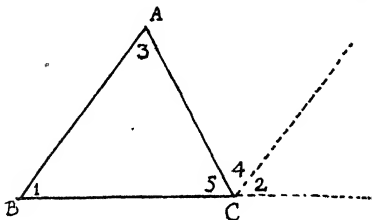


Fig. 5.

NATURE OF INDUCTIVE REASONING — Induction proceeds from the observation of particular facts of experience to the formulation of general laws. This process of reasoning is said to consist of four steps: the observation and analysis of facts, the formulation of a hypothesis to explain the facts, the verification of the hypothesis through deductive reasoning and establishment of the law. Thus there is common experience that all bodies lose in weight when emerged in water. One who has carefully observed this phenomena, and has a keen intellectual thirst will look for an explanation of the phenomena. He will formulate several working hypothesis and try them. Finding that none of them succeeds he may come by the idea of upthrust though analogical reasoning from weight of a thing becoming less when some one is pushing it up. The hypothesis may suggest itself that water may also be pushing the thing up. This may be further verified and the exact amount of push in each case be determined. By weighing different kinds of solids in water and in air it would be found that the loss of weight proportionately differs in different cases. Then the exact nature of the upthrust may be determined by a number of experiments. Thus the law is stated, "A body, when emersed in water loses weight equal to the equal volume of water." The hypothesis which was a mere conjecture to begin with has been verified and established into a definite law. Its vagueness has disappeared.

Now the student can explain all phenomena of loss of weight. He has acquired a new concept, has added to the store of information contained in his *guide book*. Induction thus *results in the enlargements of the concepts* that are possessed by a student. Reasoning as such consists in finding explanation for the observed phenomena, that is, in solving a situation. When the stock of ideas already possessed by the thinker would not help him, he has to acquire new ideas. This process of acquisition of new

concept is called induction "The term induction," says Dumville, "is best employed, for those cases in which the ideas we already possess are found insufficient to explain the phenomena in question, and consequently direct us to further observation of the concrete When we find the reason or explanation among the ideas which we already possess, the process is usually a case of deduction When we have to search the new ideas, it may be called induction But in both cases the reasoning process is the same, it involves the understanding of the concrete in light of the abstract "

HEURISM IN INDUCTION —Induction requires original thinking Much of the so-called inductive reasoning in the class room is not original It is imitative, the student simply goes through the trains of idea as suggested by the teachers' activities and words The new concept does not come in answer to a quest made by the student to solve his own problem We must distinguish this kind of thinking from real original induction Here is an example of original induction which is a real research made by the learner The example is of a nine-year-old boy searching for the cause of the rainbow

"He finds a kind of rainbow on the floor He calls his sister to see, and wonders how it came there The sun shines brightly through the window The boy moves several things about upon which the light falls, saying, 'This is not Nor this ' At last when he moves a tumbler of water, the rainbow vanishes There are some violets in the tumbler, which he thinks may explain the colours on the floor, but, when the violets are removed, the colours remain Then he thinks it may be water He empties the glass, the colours remain, but they are fainter This leads him to suppose that the water and the glass together make the rainbow 'But', he adds, 'there is no glass in the sky, yet there is a rainbow, so that, I think, the water

alone would do, if we could hold it together without the glass, He then pours the water slowly out of the tumbler into a basin, which he places in sun light and sees the colours on the floor, twinkling behind the water as it falls ”*

The boy has learnt a new lesson, he has added a new concept through his search for an explanation of the rainbow The boy is, of course, much above the normal boys The process of thought, however, that is involved in real induction is made clear. The boy had a problem. The activity was initiated in answer to *his* problem He made a case analysis of the phenomenon before and looked for explanation among the stock of ideas he already possessed He saw that some of them would explain In the course of his search he hit upon a new idea This explained the fact in hand. A further verification of the same would make it a law. In this process, however, the idea becomes more clear and definite

Few students are capable of the above kind of heurism But the teacher should do all in his power to create problems to the students and encourage the students to independently solve those problems Even where the students fail to attain the solution, the attempt at getting the solution itself has a value. Many of the conceptions of the students become clear in the process of effort, their power of observation and analysis increases It is only when the minds of the boys are heated and their desire to get at the solution becomes keen that the teacher's help is appreciated. Knowledge thus acquired becomes a permanent possession.

UNITY OF DEDUCTION AND INDUCTION —Induction aims at the arriving of a general proposition through the observation and analysis of particular facts, deduction is concerned with the application of this proposition to

*Edgeworth, *Practical Education*, Vol. I, p 84

particular cases. The two processes in Logic are regarded as complementary to each other. Induction will have no verification without deduction and likewise there can be no deduction excepting from a general principle arrived at through induction. As previously pointed out, induction aims at enlarging the concepts, deduction with their right use. Both are aspects of one reasoning process.

But every kind of thinking, inductive or deductive, is always initiated by a problem and ends in the solution of the problem. Each kind requires the analysis of the given data, discovering either the hypothesis or the middle term to get at the proper explanation of the phenomena. The process is differently named as it is based on previous knowledge or as it makes use of new knowledge to explain the case. When the necessary ideation systems are clearly defined, and can be readily used to explain and add to the concrete with which we are dealing, we call the process deduction. When our ideational systems are distinctly inadequate and require to be appreciably enriched by additional observation and consequent conception, we call the process induction.

TRAINING STUDENTS IN REASONING

Training in reasoning consists in placing the problems before the students and asking them to think about the solution. When the students fail to find out the solution independently the teacher will help the students to determine the relevant data, and to analyse them. A proper analysis itself suggests to the more intelligent student the solution. The student should make an effort to find out the clue or the middle term to the solution. This will, of course, be through the process of trial and error. The activity involved in trial and error to get the clue is the real training in reasoning. When the students do not

themselves make effort, there is no training in reasoning. A teacher who solves all the difficult problems in Arithmetic for the students in the class is not really training them in reasoning. The students simply repeat in their minds the ideational activity gone through in the minds of the teacher. They are trained simply in imitative thinking. Such students can solve only such problems as are like the problem solved in the class. They cannot make original ventures and they become confounded whenever a little change in the nature of the problems is made. The teachers, often in their anxiety to get much work done in the class, ignore the importance of independent thinking by the students. When the students are allowed to think independently under the guidance of the teacher, the amount of work as judged from the external output seems to be small, but the educative value of this small work is very great.

Let us take an example from Geometry. Supposing the proposition to be proved is: The line that joins the middle points of the sides of a triangle is half of the base of the triangle.

The teacher has to ask the students what is given and what is required to be proved. He will direct the students to represent what is given by a figure and ask them to point out what is required to be proved in the particular case.

Now comes the question of the analysis of the data to discover the clue to the solution. For this the solution aimed at has to be ever kept in view. At times it requires inverse deduction, from the solution required back to the data, or again, one may mentally go through from the data to the solution. The teacher through a set of questions will help the students to analyse the problem.

The students know the conditions of congruency of triangles, they know the properties of parallel lines and of parallelograms. They are to be directed to see if the solution of the problem could be attained by a suitable arrangement of this previous knowledge.

The students make the figure on their note-books. They realise that the figure, as it is given, does not help

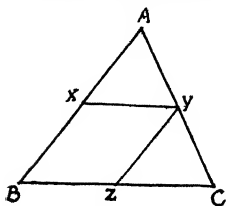


Fig 6

to the solution. Some construction must be made which would establish a relation between the base and the line joining the middle points of the sides. One such construction is, joining the middle point of one of the sides to the middle point of the base. Thus, we get the figure XYZB (see Fig 6)

Now if it could be proved that XYZB is a parallelogram the solution would be easily attained. But an examination of the available data soon convinces the student that it cannot be proved to be a parallelogram, though it looks the one.

The student then next conceives YZ as drawn parallel to XB. This figure also does not help. It will not show that Z is the middle point of BC and XYZB is a parallelogram. Now the student is led to attempt another construction. He produces XY to M making it equal to BC, he joins MC getting XMCB. Here he tries to see if the resulting figure is a parallelogram. For, through the help of the congruency of triangles it could be proved that XY is half of XM. But this also is found to be of no avail.

Lastly the student hits up on the alternative of making $XM=2XY$ and joining MC , thus giving the figure $XM CB$

Now this figure (see Fig 7) is to be proved a parallelogram. If this is done the proper middle term would be found. For that will prove $XM=BC$ and $\frac{1}{2}XM=\frac{1}{2}BC$ i.e. $XY=\text{half the base of the triangle}$

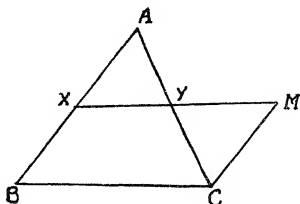


Fig. 7.

Here we find that there is data enough to prove the congruency of the triangles XAY and YMC which makes evident that $MC=AX$ or XB and parallel to it. This then easily leads the student to the solution that resulting figure is a parallelogram and consequently XY is half of BC .

ESSENTIALS OF TRAINING IN REASONING — Training in reasoning consists in allowing the student to make mistakes and correct himself. He should again and again analyse the data to find the solution, and manipulate it in different ways. The solution thus obtained becomes his possession for ever. All his old stock of ideas becomes active. They are revised and made definite. He gains self assurance when he attains the solution himself, working under the guidance of the teacher, and can confidently attack a new problem himself.

What the teacher usually does, is that he makes the required constructions in geometry for the boys himself.

and considers it a waste of time on the part of the students to attempt to find out the construction for themselves after making many mistakes. But thus we only succeed in producing scholars who can memorise what is told and not real thinkers who can reason out the solution of problems facing them in life by themselves.

Lessons of the type noted above are said to train students in deductive reasoning. Here the train of reasoning proceeds from the knowledge of certain proved valid propositions to the establishment of a new proposition. This new proposition is a deduction from the known propositions, and the latter themselves have been previously established from certain axiomatic truths. All mathematical reasoning is of this nature.

In inductive reasoning, however, we have to discover new principles through the observation of facts and not merely seek to deduce them from more fundamental principles. This type of reasoning is to be found in Natural Science, Geography and Social Studies. We must, however, distinguish an *inductive lesson* from real induction. Usually the name inductive lesson is given to any lesson in which a new concept is evolved by the observation of particular instances. *This new concept simply binds together what has been observed.* Thus a lesson in grammar, as previously out-lined while explaining the process of judgment, is said to be an inductive lesson. We proceed here from the particular to the general and from the concrete to the abstract. But it is quite evident that no law or principle is discovered in this case. The inductive lesson has simply clarified or explained a concept. True induction is the discovery of a principle which explains a great many facts of experience. It requires the presence of a problem before the learner. There should be a desire to search out the solution. The spirit of *heuristic* is to be evoked. This we find best illustrated in a lesson in Natural Science.

Let us take an illustration from Raymont which also shows the value of the Herbartian steps in developing inductive reasoning among students. The lesson is on the expansion of solids. The solid, liquid, and gaseous states of matter have been previously taught and the effect of heat on liquids and gases is demonstrated. Now the teacher desires to make clear to the boys the effect of heat on solids. "As a first step he will ask a pupil to recall briefly the chief points of the previous lesson, and he will then intimate that the aim of the present lesson is to ascertain what happens to certain solid substances when they are heated. The second step will consist of experimental work. The teacher will have at hand a few metal rods, and with the help of some simply devised apparatus, such as any text book of physics may suggest, will lead the pupils to observe what happens when the flame of Bunsen burner is applied to any of the rods. The third step will be the formulation in set terms of the general truth suggested (though not conclusively proved) by the experiments. In the fourth and final step the application of this general truth to certain questions of every day life will be pointed out. Why are spaces left between the rails on the tramway and railway lines? Why are gas and water pipes made with telescopic joints? Why does a thick tumbler crack when hot water is poured into it? How may a stopper stuck fast in the neck of a bottle be got out and why?"

Here the teacher has to see that as far as possible the observations and experiments are planned and done by the students. "When the observation or experiment," says Dumville, "is undertaken by a child at the suggestion of his teacher and, merely leads to a conceptual summary of the concrete cases dealt with, we ought not to speak of 'inference' or 'induction,' but merely of conception. It is only in so far as the observation or experiment is really a stage in the solution of a wider problem that we

can call it a part of inductive enquiry" The students should be guided by their own desire to seek an explanation for what to them presents as an inexplicable phenomena This is the case when the *Heuristic* method is adopted

What is said above simply emphasises the need of stimulating the spirit of searching out the explanation by the students unaided by the teacher They should be encouraged to be self-reliant in their quest of knowledge. This need not, however, blind us to the fact that the help of the teacher is indispensable at every turn of thought. If the student were to carry on his own independent reasoning, he will attain little knowledge in his life-time. He will be depriving himself of the benefit of the labours of the preceding generations Hence much of the inductive thinking of the boys would necessarily be a verification of the truths already established by great thinkers of ages. The teacher has to initiate the problem and guide the student in the solution of it, leaving as much freedom of choice to the students as is compatible with reasonable progress in acquisition of knowledge

THE GROWTH OF MENTAL STRUCTURE.

The mental structure grows through thinking and reasoning The mind grows generally through the accumulation of experience But it is never passive in the reception of this experience There is no experience without the "synthetic activity" of the mind As the sense impressions impinge themselves on the mind, the latter at once sets to work on it Thus we get percepts Perception, thus is a product of the synthetic activity of the consciousness. It involves, in other words, thinking Thus, in a very general sense, there is no experience without thought It may be at different levels—perceptual, imaginative or conceptual—but the fundamental activity is the same

There is a great divergence of opinion among psychologists with regard to the nature of the thinking activity and the way in which the mind grows. According to Locke our experience grows by the accumulation of ideas which are originally caused by the sense impressions of the outside world. The outside world causes simple ideas — the ideas of colour, taste and smell in us. These simple ideas are joined together to form complex ideas of objects. These again give rise to general ideas — those that are denoted by class names. Likewise abstract ideas are formed by abstracting common features from a class of general ideas. The abstract ideas are commonly known as “concepts.” Thus a concept according to Locke — is an abstract idea formed by comparing several individual ideas belonging to a class. These ideas are further associated together by various relations, so that they tend to be recalled together whenever any need arises. In associating one idea with another lies, according to Locke, the essence of thinking.

The above account of the growth of human mind is regarded by many psychologists as too simple and even perverse. The growth of the mental structure cannot be likened to the raising up of a wall or a building by putting one brick of experience over another. According to McDougall, instead of the general ideas coming last, as a result of the work of the mind on particular ideas they are rather the first to come.

“We must repudiate as false,” says McDougall, “an old fashioned way of describing the growth of the mind, which consists in assuming that the mind begins by acquiring “ideas” of distinct particular objects through perceiving them as such, and that it then associates its “ideas” of these particulars to form more complex “ideas.” This is the associationist doctrine. It assumes that we begin by getting, through sense-impressions, distinct

"ideas" of various sensory qualities, that these then become linked or associated together in various groups to constituted ideas of complex objects or "compound ideas," that for example, the child gets through sense impressions an idea of red colour, an idea of roundness, an idea of weight, an idea of solidity, and then puts them together to form an idea of an apple, that in a similar way it forms an idea of an orange, of a pear, and of a plum, that later all these *particular* "ideas" become associated together to form a generic "idea" of an edible fruit, the differences becoming vague through neutralization, the common features becoming accumulated in virtue of their similarity and consequent repetition of similar impressions. This is the doctrine of the "generic image" as a stage in the formation of "general ideas."

"This theory of mental growth of association and accretion, which is an inevitable corollary of the mosaic or atomistic psychology, really inverts the true order of events. It describes mental development as beginning with the cognition of particulars and advancing to the cognition of more general, whereas, *in reality we begin by cognition of the highly general and progress gradually to the cognition of the particulars*

"The advance of intellect is from knowledge of a few objects of very highly general type, towards knowledge of the multitude of concrete individual objects and their peculiar qualities and relations"*

The animal and the child is more familiar with objects of a class than with individual objects. The recognition of differences among objects implies a higher stage of growth than recognising them as all alike. The growth of the mind is like the growth of a tree. As a tree evolves by growth and differentiation of its stems into branches,

*McDougall *An Outline of Psychology*, P 381.

twigs and leaves, so too the mind evolves through a process of differentiation from a few primitive systems.

Now the thinking process involved in the growth of the mind may be distinguished, following McDougall, in three types—discrimination, apperception and association

DISCRIMINATION —The child's knowledge grows as he strives to satisfy his inner urges. The food-seeking instincts urge him to handle a number of objects and take them to his mouth. Thus he begins to discriminate between edible and inedible objects. As the child strives to achieve certain goals in relation to certain objects, he learns to discriminate them. The child is attracted towards all moving objects. This is due to his instinct of curiosity. Later he begins to make distinction between living and non-living objects. Still later he discriminates between animals and human beings and these again are discriminated as mother, nurse, father, dog, cat, bird etc.

In this process of discrimination the child is greatly helped by the use of language. "Successive generations of men have made finer and finer discriminations, and have given conventional or traditional permanence to discriminated classes and objects by labelling or naming them." He learns that a particular object belongs to a particular class through the use of a common name. Thus names make his learning of permanent value.

APPERCEPTION —Apperception is the process by which essential similarities between different objects or classes of objects are discovered. Discrimination involves the finding out of differences, apperception involves the finding out of similarities. Herbartians use the word 'apperception' to name the process by which new ideas are admitted among the old. Here too similarities have to be discovered among new ideas and old ones. But merely calling back

of similar ideas is not apperception, apperception in its highest form involves the recognition of common qualities among objects that seem to be quite different from each other. Thus, for example, the child may have seen dogs, cats, calves etc. He recognises them as distinct classes of objects, but he may not have noted their similarities. They may not be known to him as animals. This is done when several objects are called together to the mind and their common qualities are noted. These are then named. "The abstraction of common qualities," says McDougall, "from many different things and its fixation as an object of thought, by the aid of a name are the completion and perfection of the process of apperceptive synthesis"* Thus are concepts born.

Individuals differ in this capacity greatly, but without possessing it in a considerable degree thinking of a higher order is not possible. A man may pass all his life in gathering experience, but unless he has the capacity to recognise the essential similarities between two different types of experiences he cannot progress far in life. "He may become a paragon of learning, but not a wit, a discoverer, a poet or a creator in any field"† This process has been named by Stout as reproduction of similars as distinguished from reproduction *by* similars. The latter is a much easier process, as it involves thinking together of things which have been thought together before due to their similarity. The former is difficult in as much as it involves both discovery of similarities and the calling of things to the mind which were not thought together before.

In this process again we are greatly helped by language. "Language embodies in a traditional form the mental achievements of our predecessors. The words which lead us to effect such synthesis embody the achievements of

*McDougall *An Outline of Psychology*, P 390

†Ibid, P 388

the original minds of bygone generations, who in each case achieved the synthesis, by some act of independent or original apperception"* Behind every word there is the meaning The word is merely a symbol of the meaning. This meaning is the apperceptive system which becomes operative as soon as the word is heard Our mind is made up of a number of such systems synthesised into an unity

Apperception may be explicit or it may be implicit In the case of explicit apperception the common qualities are distinctly recognised, in the case of implicit apperception the recognition is implicit When we feel attracted towards or repelled by any person such implicit apperception works This is due to many complex factors which it is difficult for one to analyse Implicit apperception is to be found more in children than in adults Due to lack of language they cannot think clearly, yet what they do may be right In all such actions, they are guided by implicit apperception or instruction

ASSOCIATION — Association is a further process of mental development Discrimination leads to the discovery of difference, association to similarities, association makes possible the establishment of relationship—temporal, spatial or causal between two facts of similar or dissimilar nature Our mind is ever forming new associations between ideas Temporal contiguity is said to be the main cause of association among mental structures But really it is not mere temporal contiguity that is at the root of all associations. It is true that things are called back to the mind as they are attended to But we attend to only those objects out of the many that surround us which have meaning for us Similarly when we think upon past experience the purpose in hand determines recall It is *conative continuity* and not mere temporal contiguity, which determines the formation of associations among

*Ibid, P 387

facts of experience. New associations may be formed among preformed mental structures as the purposes change. Thinking in the highest form is nothing but an establishment of new associations between mental structures that are already present in the mind. All thinking is guided by purposes, and associations among mental structures change as purposes change. When once a new association is formed between two mental structures, it is retained by the mind. This association becomes of value in later thinking. A well developed mind is not only a mind with many concepts or apperceptive systems but a mind with many associations among these systems. It is ever enlarging the systems and knitting them up into a complex unity.

References,—

1. McDougall. *An Outline of Psychology*, Chap. XV.
2. Gault and Howard. *An Outline of General Psychology*, Chap. XI.
3. Dumville. *Fundamentals of Psychology*, Chaps. VIII and XI.

CHAPTER XVII.

TRANSFER OF TRAINING.

We have described in the previous chapters the various powers of the human mind and have pointed out how they can be developed. Here comes a very important question for educationists to solve. How can we train the mental powers of the child? Has this training a permanent value?

Before the beginning of the present century there was a notion prevalent among educational thinkers that we can train the various faculties of the child mind, such as the power of observation, memory, imagination, thinking or reasoning as we can train the body by proper exercise. If memory or imagination is exercised well it will improve. It did not matter what kind of material it is which is provided for such exercise. Some people believed that one kind of material trained some powers better than others, hence such material should form the proper course in the curriculum of studies. Thus M G Glazebrook in *Teaching and Organisation* says, "Memory is trained by most studies but best by language and history, taste is trained by the more advanced studies of languages, and still better by English literature, imagination by all higher language teaching, but chiefly by Greek and Latin poetry, observation by science work in the laboratory, though some training is to be got from the earlier stages of Latin and Greek, for expression, Greek and Latin composition comes first, and English composition comes next, for abstract reasoning, mathematics stands almost alone, for concrete reasoning, science comes first, then Geometry; whilst for social reasoning, the Greek and Roman histories and orators come first and general history the next"*

*Quoted by Raymont in *Principles of Education*, p. 94.

There are other writers who believe that for training of the faculties any kind of material will do. Educators who believed in such doctrines prescribed large number of poems to be committed to memory by students without regard to the fact whether they interest them or not. Similarly, elementary science was taught to develop the power of observation, *Euclid* to develop reasoning and literature to develop imagination.

There has been much discussion over these views. Teachers and employers agreed in the view that there was great transfer of training. It was pointed out that persons who took up Latin and Greek succeeded better as administrators than others, because of the fact that the study of these languages developed the power of discrimination and proper application of the rule—powers which are of very great value for an administrator. The contentions of Latin teachers were criticised by others. They pointed out that the success of the administrators was not due to their study of Latin, but due to qualities inherent in their nature. The Latin classes simply revealed the mental and moral values of the educand. Those who took these subjects came out of the selected class, or were selected individually by some test or scholarship examinations, the Latin course was stiff enough and those who did well in it were expected to do well in other subjects also. This was so not because of their learning Latin, but because they had originally more tenacity of purpose or better general innate abilities than others. The Latin course was like prolonged intelligence test, its main utility lay in finding out intelligence not in creating it. But the test could be done by other means also. The time thus saved could be devoted to the study of other more useful subjects—those that have bearing on activities of life.

Most educational thinkers and the psychologists of the present day do not subscribe to the view that there

is any real transfer of training "We are told", says Raymont, "that elementary science, including nature-study is to be taught in order that the faculty of observation may be trained, the implication being that the employment of eyes and hands in discovering properties of certain objects (no matter what) will make one a good observer of anything that comes in one's way. Now there is no sane person with normal sense organs who is not a good observer of certain sorts of objects and events the thief who has rarely seen the inside of a school, much less of a laboratory, may have a sure eye for watches and purses. The question is, then, not one of training people to observe, but of training them to observe some things rather than others. In other words, the question is of one of creating interests""*

Every one is a good observer in his own sphere of interests. The geologist, the physicist, the scholar, the detective, the physician, are all good observers within their own sphere of studies change it and they become indifferent observers. We have no faculty of observing things at large and if at all such a faculty could be evolved it could be done only by cultivating interest in things in general—that is by creating suitable apperceptive masses in the mind of the child.

What is true of observation is also true of other faculties of the child mind. The faculty of imagination, it is said, is cultivated through the study of literature. This has been made a justification for teaching children myths and fairy tales. This is a wrong educational doctrine. Myths and fairy tales should not become the staple food for the intellect of the child. They should be provided merely as relaxation just as adults read novels and plays for relaxation. The imagination of the child can be trained in

**Principles of Education*, p 94

everything that lies to hand. We have to choose the proper material with due regard to its future usefulness for the child.

EXPERIMENTAL EVIDENCE —To determine the extent of transfer of training two groups of subjects, usually students, are taken. The students in each group should be of equal ability, that is, for each student of a certain ability in one group there should be a student in the other group also who can match with the former, the two should be nearly of similar age, same sex, same race, same school training, same intelligence, same ability in memorising. To determine this, preliminary tests in intelligence or memory are administered.

Having thus classified the two groups, one of the groups is given a particular task, say memorising non-sense syllables for half an hour per day. The other group, called control group, is given no such work but is engaged during the same period in such occupations as drawing or nature study. For the remaining periods of school the work for the two groups remains as usual.

After the boys have been so practised for about a fortnight or so, a test in memory is given to both the groups. This test is very dissimilar to the task originally given for practice. It is found that both the groups show some improvement in memorising power and the group which had been practising at a memory task shows a bit greater improvement than the one not so practising. But the amount of achievement is very insignificant. Had the same group been practising at some task which resembled the nature of the memory test to be given later on, appreciable improvement would have been reached. This shows that memorising the non-sense syllable for a fortnight did not help much in memorising a prose passage on something very dissimilar to the original task. The memory as

a faculty has gained nothing from such an exercise. There is no transfer of training from one kind of task to another.

Such experiments have been criticised for the reason that they are very artificial. The material given is not like the one we usually find in daily life, it is especially distasteful to children, the time given for practice is too little as compared to the rest of the time otherwise engaged. Hence such an experiment decides nothing about the transfer. What we can expect out of such experiment is that a candidate who has been trained in tests like these should be able better to stand similar experimental tests and this usually is found to be true. Unless the natural conditions are taken for experiment, the question whether transfer of training takes place or not cannot be decided.

A CRUCIAL TEST — Thorndike performed an experiment in 1922-23 which is more or less free from the above criticism of artificiality or shortness of time.

The experiment was performed with 8000 students and the time over which it was spread was one year. These students were given I. E. R. (Institute of Educational Research, Teacher's Training College, Columbia) tests in the beginning of the year. They were not made aware that they were acting as subjects of an experiment. During the course of the year they were allowed to study their usual subjects. At the end of the year the students were given the same tests. It was found that there was general improvement in the scores obtained this time. It had to be determined whether any particular subject contributes more than others to obtaining a higher score. For this out of 8000 students two groups were sorted which had every subject in common except one. Suppose, the one group had taken Latin and the other Cookery, now as a result of the calculations it was found that the difference in subjects did not materially affect the difference

in the scores obtained at different times, stenography being pretty as good as Latin or Cookery or French or Natural History

This experiment is above many of the criticisms directed towards other experiments. Yet the critics are not altogether silenced. They point out that the results of training appear after a sufficiently long time and under absolutely natural conditions, that is, we can judge whether there is transfer of training or not only by studying the life history of individuals taking particular subjects. Now this is very difficult and expensive, further it may involve a number of factors which viciate the true result of the transfer of training as such. Hence, though we cannot absolutely convince those who believe in the transfer of training theory, at least they are silenced for the time being. The experiments at least show that transfer of training is not as easy to detect as it ought to be, were it occurring on a whole-sale scale.

There is a sense in which transfer of training cannot be denied by any one. Even in memorising non-sense syllables, the subject is forming habits of contracted attention or analysing his task, or the pupil may discover that saying silently is better than saying aloud. This will help him in doing other memory tasks.

"In playing tennis," Says G. H. Thomson, "improvement may come from keeping one's eye on the ball and the consciousness of this may cause transfer to playing cricket, in spite of the different stroke. In weighing evidence in history, the actual consciousness of the importance of having all the evidence before one may cause transfer to weighing evidence in business affairs or in chemical or even mathematical problem. Shortly, if each and every subject is taught as a page or chapter of the universal subject "how to think," and the

principles of how to think are constantly and consciously appealed to, transfer appears to be much more probable.”*

From what is said above it is evident that most subjects of the curriculum, if rightly taught, will develop those qualities of the mind in the students which are often needed in life. We can promote habits of systematic thinking in our pupils through the subjects that a student has chosen to study. Hence, as Thomson points out, “subjects of instruction will not therefore be included in curriculum light-heartedly on the formal ‘discipline of the mind’ argument, other things being reasonably equal useful subjects will have the preference”†. But let these useful subjects be not merely the easy subjects. On the whole training in mathematics or classics is of greater value than training in cooking or in school botany, yet few girls will prefer the former to the latter.

EXPLANATION OF TRANSFER OF TRAINING—THE THEORY OF COMMON ELEMENTS—That there is some transfer of training while studying different subjects cannot be denied. A student who works assiduously on the whole fares better in life than the one who takes life easy. A first class student in one subject, usually succeeds in

*Thomson — *Instinct Intelligence and Character* p 144

Thomson, on the whole, seems to deny that there is a great deal of the transfer of training. Thus he says, “What the person of average ability gets out of a mathematical training, for instance, apart from the actual knowledge, is a habit of the mind when confronted with quantitative problems, a belief that an orderly setting down of problems in a suitable notation will go far towards solving it, a confidence that the right answer can be recognised as such by simple tests when it is obtained and a familiarity with abstract notion of space and time, relationship which is greatly encouraged by the proper association of symbols with geometrical or physical examples. Such habits of mind appear, a priori, to be likely enough to transfer to any quantitative problem of life not commonly called mathematics and to lead to greater power in dealing with such problems, but not immediately to greater speed in dealing with them.” *Instinct, Intelligence and Character* p. 142.

† G. H. Thomson, *Ibid* p. 143.

scoring quite a high percentage of marks in other subjects also Thorndike explains this phenomena by his famous *Common Elements Theory* The student who scores high marks in one subject scores high marks in another subject also, simply because this second subject has many elements in common with the first If there are two subjects that have no common elements among them, that is, if they are absolutely unrelated to each other, then the mastery of the one will not help in gaining mastery over the other. Thus, for example, learning poetry by heart will help in learning prose because there are many common elements between the two, but it will not help in memorising formulæ of mathematics or chemistry Similarly training in learning non-sense syllables helps very little in learning sensible material

One who has received training in one branch of mathematics or physics or literature does well in other branches of the same subject also, as there are many elements common to the two branches But one need not expect a transfer of training if one changes his subject from literature to mathematics, or vice versa Hence the direct learning of a subject is always to be advocated. If a student has to be a businessman in life, let him learn economics, if he has to be a politician, law and politics or history, if he has to be an organiser of an industry, let him learn the method of organising industry and the details of its working

THE TWO FACTOR THEORY.—Transfer of training is explained with the help of Spearman's Two Factor theory of intelligence as follows.—The learning of every subject requires the exercise of a child's general ability as well as the exercise of his special abilities Hence every subject gives a training which would be useful in learning any other subject or for becoming successful in life generally, it, at the same time, develops special abilities which are

needed only to do a particular task. There is transfer of training in so far as the exercise of general ability in a subject is concerned. There can be no transfer of training in so far as special abilities are exercised, unless another task of a similar nature is taken in hand. Again Spearman believes that there are certain subjects which require more of 'g' than of 's' factor for learning them. Thus mathematics, science, classics, history require the exercise of 'g' more than of 's' whereas music, manual training, drawing etc. require the exercise of 's' more than of 'g'. Hence a training given in the former class of subjects is always of greater value than training given in the latter class, for we require in life generally a greater exercise of general intelligence rather than of special intelligence.

THOMSON'S VIEW.—Thomson advances the view which in a way reconciles the views of Thorndike and Spearman. According to him a large number of subjects should be chosen for the child's study in the school stage. Too early specialisation is not desirable. Though every subject exercises the intelligence of the child, it is exercised in its own characteristic way. The larger the number of subjects the better would be the exercise of the ability required for general use in life. "The mathematician may not learn to be accurate, only to be accurate-in-mathematics. But the chemist-cum-biologist may have a better chance of learning accuracy in itself, having learnt it in two different provinces. So it may be, may it not, that transfer from three or four subjects to a fifth, or to life, may be greater than from one even if taught more intensely.*" Intensive training in one subject, to the exclusion of others is thus desirable. The subject will create habits of thinking peculiarly needed to it, but a man with such habits is handicapped when a

*Thomson : *Instinct, Intelligence and Character*, P 146

dissimilar situation has to be faced. Mathematics, history and physics all require thinking, arriving at generalisations and application of them to particular cases, yet the types of thinking when considered in detail are different. In one subject the difficulty lies not in getting the data but in reasoning out the consequences, whereas in another, the main difficulty is that of getting the data and appraising their value, in a third, the chief difficulty may be the formulation of a working hypothesis.

Hence, if reasoning is exercised not in one subject but in different subjects, the training so received will be of far greater value than when all attention is concentrated on one subject.

Reference —

- 1 Thomson *Instinct, Intelligence and Character*, Chapter XIV.
2. Raymont *Principles of Education* Chap. VI.
3. Dumville : *Child Mind*, Chapter on Memory.

CHAPTER XVIII

CHARACTER

Character is one of the most difficult concepts in psychology. It defies any attempt at definition. Moreover there are divergent opinions with regard to the connotation of the term. In common speech the word character denotes an aggregate of virtues. Thus when Smiles says, "Men of character are the conscience of society to which they belong," he means by 'men of character' virtuous men. Similarly when one says 'when character is lost, everything is lost' one means by character certain praiseworthy traits in one's life. When, however, we use the expression 'bad character', we make the word stand for vices also. Then the word character would come to mean certain habits of action that have an ethical significance.

Looked at from the point of view of psychology character also denotes several complex qualities of the human mind*. It implies a certain development of cognitive, conative and effective trends. It may be said to imply a certain structure of the mind consisting of feelings and tendencies to actions. But these tendencies are themselves controlled by ideas which have associative links and unity among themselves. There can be no character without an ideal control.

*"We mean by character something relatively stable and permanent. The term denotes preferences in the way of action, established inclinations and ambitions, achieved standards of value. Character is a matter of habitual inclinations—but it is something more than mere habit. It involves the integration of many specific determining tendencies of the individual into a single organic and dynamic whole"—Gault and Howard—*An Outline of General Psychology*, p.

To understand, however, the concept of character fully we have to understand certain other fundamental concepts of psychology. These are *will*, *sentiments* and *self*. They bear intimate relation to character.

WILL —By will is implied the power to determine one's actions by oneself. Our actions are either impulsive or they are guided by fore-thought and reason. In the case of impulsive actions we do not think about the remote or ultimate consequences of the act. We are led to do the act at the mere emergence of an idea to consciousness or at the reception of an stimulus from without. Here we act on a level with the brutes. As the brutes have no ideal development they have no fore-thought or reason. In their minds deliberations do not take place. But human beings deliberate, weigh motives, choose one out of several motives and then act according to the chosen motive.

Let us take an illustration. Suppose a student is sitting in the class and another student spills ink on his books. He gets angry and gives him a good slap. Here he would be acting at an impulsive level. A dog would behave in the same way if some one touched his food. But supposing he pauses for a minute, thinks of the consequences and then takes the proper action, his act would be a deliberate act of will. There will be a tendency to express displeasure and there will also be a tendency to inhibit this tendency or to take some other step. There will be divergent ideas present in his mind which may become the motives for action. The two motives contend among themselves, then ultimately it is *the will* that decides as to which one will issue forth in an act and which will be inhibited.

Now what is this *will*? According to James it is something over and above the motives—something

spiritual. It is in the development of this power that the strength of character lies. Its development takes place by use. The more is the will exercised the more powerful does it become. And character is nothing but "a completely fashioned will."

Stout holds the view that there is no such thing as a 'will' existing independent of, and over and above the contending motives. But he says that motives by themselves are not forces—the mere presence of an idea to consciousness will not make it issue forth in an act, the force is supplied by *the self* of the man, i.e., his past history, the ideal development of his mind and the organisation of his conative tendencies. In so far as an act is undertaken after deliberation of motives and is appropriated by the self as its own act, there is the exercise of the will power. Will is nothing but the self itself in action, and the exercise of the will constitutes character. In the second part of the statement made in the last sentence there is agreement between Stout and James

A single act of will, however, cannot make character. Character is an organisation of habits that are built up through repeated actions. Habits, as we have previously pointed out, are tendencies of action conserved by the human mind. The racially inherited tendencies we call instincts, whereas tendencies which an individual acquires in his own life time are called habits. The latter are a modification of former tendencies, or are grafted upon them. They are called by Stout "Secondary automatic acts" to emphasise the fact that a man acquires them in his own life, that they are not inborn, but when once acquired they become as natural as instincts.

Thus we see that habits do not constitute a part of our inherited nature. They are not acquired possessions.

How is this acquisition made ? It is made by doing acts which are not merely instinctive, but are a deviation therefrom. An action which is done again and again leaves a permanent trace in the mind in the form of a tendency to recur whenever a suitable situation arises. It becomes a part of the nature of the man. And character is nothing but this acquired nature. Whether it is good or bad depends on what tendencies of action a man has acquired.

When, however, we so define character we give it a much wider meaning than the one given before, viz., that it consists in the power of self-control. Ethical writers consequently define even habits in such a way as not to make them contradict the conception of character as self-control. They say that the name 'habit' is to be given only to those tendencies to action which require for their accomplishment the effort of the will, that is, habitual acts are not mere automatic acts, as instinctive acts are, but they are rational. Acts by which habits in the ethical sense are created, are willed acts, they preceded by conflicts of motives, deliberation and choice. Habits here mean virtues. They indicate self-control.

SENTIMENTS — It is sometimes said that character consists in proper organisation of sentiments. A sentiment is defined as an acquired conative trend of the mind. It is a fact of mental structure just like instincts, which are innate structures, it develops out of certain emotional experiences towards objects and is potent with emotions, which it gives rise to at suitable occasions. There are several sentiments in our minds. The child develops first sentiments for material objects, then gradually develops sentiments for men. Thus we have a sentiment for the cow, a sentiment for the country and sentiments for abstract ideals like truth, non-violence, cleanliness, punctuality etc.

Over and above the various sentiments there is, according to McDougall, the *sentiment of self-regard** which subordinates to itself and organises all the other sentiments. In so far as the sentiment of self-regard is strong enough to organise and subordinate to itself other sentiments, there is said to be character in man. "Well-developed character", says McDougall, "I would say, is an integrated system of sentiments, a system that is a hierarchy dominated by a single master sentiment and integrated by that dominance"² Character is nothing but the sentiment of self-regard functioning as a controlling unity of all other sentiments.

Whether we should call this regard for the self as a sentiment, is doubtful. The self has sentiments towards other objects, how can the self have a sentiment for itself or be itself a sentiment? Things have value as attached to the self, what will give value to the self? Hence the concept of the sentiment of "self-regard" does not seem to have any meaning. The organisation in our mental

*The sentiment of self-regard develops as a result of inter-action with society. McDougall identifies it with the *empirical ego*, the "me" or the psychological self. "At last he learns," says McDougall, "under the guidance, the suggestions, and the persuasions of those towards whom he is docile, to pass judgments upon himself as upon others, and so to build up a system of beliefs about himself and about conduct and character in general. In these ways the word "I" or "me" grows richer in meaning, as he builds up a system of beliefs about his own nature, as system of beliefs which is rooted in, because in the main sprung from, the two great conative dispositions of self-assertion and submission.

"This object "me" thus becomes represented in the structure of the mind by a system of dispositions of extraordinary extent and complexity, a system also which is associated with a multitude of past events and objects, and located more or less definitely in time and place. And the conative disposition of the system, brought into play so frequently, by every social contact, whether actual or only imagined, becomes delicately responsive in an extra-ordinary degree, as well as very strong through much exercise. Such is the sentiment of self-regard." *An Outline of Psychology* pp 427, 428

The self regarding sentiment grows gradually. Everything which the man calls "me" or "mine" became a part of the self-regarding sentiment

life is brought about by the self we have. Even if there be such a thing as a self-regarding sentiment, it must have a subordinate place to the self which is not itself a sentiment

THE SELF —In clarifying the concept of will and its relation to character we introduced the concept of the self. What is this self? There are two notions about it—the metaphysical and the psychological. The true self of a man, it is believed by the philosophers, is beyond all determination definition or description* What we know as the self is the *empirical ego*. It is with this that the psychologists have to concern

The psychological self is a unity of experience that grows and develops in time. The baby has practically no sense of self. It develops this sense by constant interaction with the world outside. In the beginning it identifies itself with the body, then gradually it begins to regard its possessions as a part of itself. This is retained all through the life of a man, and may be called his *material self*.

As the child grows he develops a social sense. He becomes sensible of the appreciation of himself by others, and tries to please them. His pleasure then begins to consist in pleasing his fellows. He develops that is to say a *social self*.

*William James gives account of Kant's transcendental I go or pure self thus:—'At the basis of our knowledge of ourselves there lies only the simplest and the utterly bare idea I, of which we cannot even say we have a notion, but only a consciousness which accompanies all notions. The I go of all apperception is thus for Kant not the soul, but only that subject which is the necessary correlate of the object in all knowledge' p. 362 Vol. I.

The real self is the basis of all knowledge but cannot be known (through the understanding). It is the knower and what can become the known cannot be *the self* (विज्ञातारब्धे केन विज्ञानीयात्).

As the mind of the child develops, he begins to have ideals in life. He likes certain pursuits and disapproves of others. His mind is rich with thought of what he should be. This constitutes his *spiritual self*.

All the various selves—the material, the social and the spiritual have a unity, and it is this unity which goes by the general name self or ego. In highly developed individuals it is this unity that determines any action. When the unity works, we say the acts are willed acts, that is, they proceed out of rational choice. When it does not operate, the acts are said to be impulsive. In the development and better organisation of this unity lies the essence of character. Character is the whole personality of a man.

From the above explanation of the term character and its relation to will, sentiments, and self it is clear that for the acquisition of a proper type of character the will has to be trained or made strong by exercise, the self has to be enriched, proper sentiments have to be developed and proper habits to be acquired. If we do take character not in the static sense as a conglomeration of all the good traits, but in a dynamic sense as an active power of self-control, the development of character will consist in the increase of this power. The goal of education, it is said, is the development of character. How is this development to take place?

DEVELOPMENT OF CHARACTER

The development of character consists in a proper exercise of the will, in the formation of right habits of action. For acquiring character the strength of will is necessary. This means that the child's character can be

developed only when he is given an opportunity to so exercise his will. When the child merely does what he is told, the strength of the will is not gained, rather, in some cases, it is weakened. One of the essential conditions for developing character is to create an atmosphere of freedom for the exercise of the will of the child. Let him think for himself what is the right course, let there be a conflict of motives in his mind, deliberation and decision and let the action be an outcome of all this mental process rather than a slavish imitation of the behaviour of superior persons or docile submission to the authority of the more powerful.

A question here may arise will not this gospel of freedom of action result in freedom to do evil deeds also, and will it not sometimes spoil boys rather than develop their character? The question requires serious thought. For if we give freedom to a man who has no ideas how to use that freedom, he will simply bring about a run of himself. Herbart, who pointed out this difficulty, suggests the solution that it is only when the individual is given some culture that he can exercise his freedom properly, hence his knowledge has to be increased and interests to be widened.

IMPORTANCE OF KNOWLEDGE :—Knowledge improves character. A person, who has not got a large stock of ideas, has not many alternatives from which he may choose when required to exercise his free will in doing some act. The will can choose a line of action only from among those known to it and as with the ignorant men the ideas are meagre, he usually adopts a course of action which satisfies his animal wants. Hence, Herbart asserts, that a stupid man cannot be virtuous. Socrates likewise emphasised the importance of knowledge in forming character. His teaching is condensed in one pithy saying "Knowledge is virtue."

We may not agree with Herbart on the doctrine that a stupid man cannot be virtuous,* but it cannot be gainsaid that knowledge helps in the formation of character. For it is only a man with knowledge who can understand the far-reaching implications of his acts. Motives for action are strengthened or weakened according to the knowledge we have and thus our decisions are affected one way or the other. Hence, knowledge is an important ingredient in the character of a man. The ideas of men are, as George Meredith points out, "motives of men in a greater degree than their appetitions". As the knowledge of a man grows and his ideas become better organised, his actions become diversified and coherent.

EDUCATION OF THE WILL —When, however, we emphasise the importance of knowledge in the making of character, we should not ignore the fact that 'the will' is a unique power by itself, and it is not uncommon to find big brains going along with feeble wills, as also to find strong wills with scanty brains. There are men who know the better, but do the worse, that is to say, who cannot check themselves from strong temptations in spite of all knowledge † "The function of knowledge," says Raymont, "is so to illumine the will as to make a man at least capable of living as becomes a man, but the roots of will, nevertheless, lie in those primitive impulses to action which are just as original and fundamental as the presentations of which the Herbartians make so much. Hence it is that highly cultured men, whose knowledge may be as unified and connected as you please, may on

*This view implies that in the formation of character, the knowledge of the child should be increased, and his interests be cultured. Character depends on our habits of action, and the latter depend on our interests, which in turn depend on our ideas or thoughts. Hence the richer and the more co-ordinated the ideas of a man, the more varied and synthesised would be his interests and action, and consequently the more developed would be his character.

†McDongall *Social Psychology*, p. 433.

occasions take to vicious courses, through the influence of bad examples or the formation of bad habits in early life, or through one of those disorders of the will—*aboulia* and the like, which seem to be independent of intelligence”*

Hence we come to the conclusion that mere knowledge will not suffice to establish the power of self-control in a child or to develop his character, just as mere discipline does not develop it. Rather the consciousness of the fact that he is doing something wrong, which knowledge creates in a man's mind, may become a source of making his will weaker than otherwise it would be. Knowledge is like a weapon which may be used in one's favour as much as against oneself. To make knowledge an aid in the development of the character, the will must be exercised according to the light supplied by knowledge. In the strength of will, as enlightened by the knowledge, lies the strength of character.

How to make the will strong? There is no royal road to it. The body is made strong by proper exercise, so too is the will made strong by proper exercise. Let the child begin with small things, let him conquer small temptations, and he will be able to conquer the

*In the Mahabharat this state of mind is depicted in the following couplet —

जानामि धर्मं न च मे प्रवृत्तिः जानाम्यधर्मं न च मे निवृत्तिः
केनापि देवेन हृदिस्थितेन यथा नियुक्तोऽस्मि तथा करोमि ।

Duryodhana here, depicting his own state of mind, tells that though he knows what his duty is, he is unable to do the right, there is some power seated in his heart whose bidding he is forced to obey.

This is the state of mind of a man who has acquired knowledge but has not acquired the power of self-control. His will is weak and he is carried away by the promptings of his impulses. There is no other power but his own animal nature sitting in him and bidding him do the evil.

†“If inner assurance and intellectual interests are wanting, if the store of thought be meagre, the ground lies empty for animal desires”—Heyward *Student's Herbert*, p. 96

great ones There is a proverb in English—'Take care of the penny and the pound will take care of itself' Drop by drop the ocean is filled, penny by penny the treasury gets replenished, so too by each small act character is built Every time the will is exercised in the direction that we judge to be right, that is every time it overcomes the impulses it gets strong, and every time one succumbs to some temptation or is carried away by some impulses against one's better reason, the will gets weaker In the beginning it is difficult to do an act that we think to be right, the will has to overcome strong resistance, but when it is done a number of times doing the right thing becomes a matter of habit and once an act becomes habitual the individual has no more to fight with himself in doing it, it becomes practically automatic and little effort is required in doing it again Let there be built a large number of desirable habits of action by a constant exercise of the will power and then self-control will not seem a Herculean task

One form of weakness of will consists in one's inability to promptly decide as to what is to be done at the moment The impulses are at war with each other and are too strong to be inhibited The individual remains in a state of seasaw, now thinking of doing one thing now the other This exhausts all his mental energy with the result that his actual action becomes a poor show. Among young men there are so many Hamlets who make tragedies of their lives, simply because in early life they were not trained to use their limbs. Only those men can act aright at the critical moment who have developed proper habits of action Our decisions are determined by our kinaesthetic impressions, we have little capacity to decide in the way we would like simply because we have not the required experience There may be no perversity of will in a man who does not take a particular right course of action. He may intellectually perceive the rightness of it

yet he may not choose to act in the desired direction. This is often due to the fact that he had not previously thus acted or he had no training to act in that way* Very often what we cannot, we do not think it right to do. Thus one's morality is determined by one's capacity or the training of will that one has received.

The following suggestions given by Gault and Howard are helpful in training the will.

1 Block out work for each succeeding day to challenge the worker's ability. Too little work encourages lolling and purposelessness.

2 Encourage a daily taking stock of accomplishments.

3 Let medals or the Legion of Honour and other rewards be near at hand not far away in time. Only the very mature persons can hold to a course the goal of which is unseen because it is too far in future †

4 Give the fullest possible opportunity for initiative. Take this away and the strongest will will deteriorate.

Every small effort of the child requires appreciation and encouragement. Heroes are made by addition of small actions. When the child feels he has power to do an act which deserves admiration by others, his tendency to do more such acts is strengthened. In course of time, such a child develops a strong personality and character.

*"If a youth," say Gault and Howard, "from the time he begins to toddle, is encouraged to lead a life of physical and mental activity in play and work covering a wide range of contacts, he will, assuming a condition of health, develop that background of kinaesthetic and other imagery that plays so large a part in the preparation for action and in its initiation and control. He will become thoroughly acquainted with himself, he will know his own capacities and limitations and thence will use a sense of confidence in himself and enthusiasm for work and play."—*An Outline of General Psychology*, p. 338.

†When great idealists become political leaders of a nation, as it recently happened in India, the masses suffer. They place too high ideals before the people and thus create a defeatist mentality in the latter. A teacher who expects too much from a child weakens his will.

The child should be encouraged to take part in actions which have a moral value. The teacher's duty is to build up moral sentiments in the child by presenting before him situations that require service and sacrifice on his part. Whenever a fine emotion is aroused advantage must be taken of it in making the child do some noble acts. It is one's actions alone that produce the deepest impressions on one's mind. Every action creates a tendency for its recurrence, at the same time it facilitates the advent of motives of a nature in line with the tendency created by it. William James has advised teachers to give children a gratuitous practice in the exercise of virtue to keep the habit of doing virtuous deeds alive. Recognising this fact Baden Powell has laid down a very salutary rule for scouts, viz, a scout must do a good turn every day.

MORAL INSTRUCTION — The place of moral instruction in the formation of character has been much discussed these days. It is said that direct moral teaching does more harm than good. It suggests to children evils of which they are innocent.* We maintain that this can be said only of the negative commands. The child is to be instructed in what he should do rather than what he should avoid doing. Then moral ideas can be communicated indirectly through History and Literature.

The foundations of character are laid only in the early childhood. The impressions of early life endure throughout a man's life and determine his character and conduct. Children at this time are to be educated in morals mostly through fables and stories bearing moral lessons. The educator should see that the child does not receive in his mind an impression which will adversely effect his moral conduct. Ideas are forces; the longer they remain in the mind, the more powerful

*Raymont, *Principles of Education* p 233

they become It is very difficult to contend against these forces when they become too strong Hence the foundation of moral behaviour is laid only in childhood ; and this is to be done by telling the child fables and stories and making him recite songs with moral purport

Plato has emphasised the fact that the greatest care must be taken in communicating to the child only those impressions which will not stand in the way of his moral evolution Such stories and poems as depict that gods wage war against gods, and intrigue and fight among themselves will be expunged from his study or recitation "For," says Plato, "a child cannot discriminate between what is allegory and what is not ; and whatever at the age is adopted as a matter of belief, has a tendency to become fixed and indelible, and therefore, perhaps, we ought to esteem it of the greatest importance that the fictions which children first hear should be adopted in the most perfect manner to the promotion of virtue"*

*In this connection Plato's advice deserves to be well-borne in mind Here is an interesting dialogue between Socrates and his disciples in the *Republic of Plato*

Socrates—Then you are aware that in every work the beginning is the most important part, specially in dealing with any thing young and tender, for that is the time when any impression, which one may desire to communicate, is most readily stamped and taken

Ademantus—Precisely so

Socrates—Shall we then permit our children without scruple to hear any fable composed by any authors indifferently and so to receive into their minds opinions generally the reverse of those which, when they are grown to manhood, we shall think they ought to entertain ?

Ademantus—No, we shall not permit it on any account

Socrates—Then apparently our first duty will be to exercise a superintendence over the authors of fables, selecting their good productions and rejecting the bad And the selected fables we shall advise our nurses and mothers to repeat to their children, that they shape their minds with them as they shape their bodies with their hands But we shall have to repudiate the greater part of those which are in vogue

The Republic of Plato Book II p 65 (Translated by Davies and Vaughan)

THE ROLE OF SUGGESTION —In childhood suggestion plays a very important part in determining conduct and shaping character. Personalities who have become great and have done lasting good to humanity, had invariably the good fortune of living in an atmosphere of healthy suggestions. They were always suggested thoughts of heroism, self-sacrifice and social service. The influence of different kinds of thoughts on the mind of a man is very subtle. We are ever affected by thoughts floating in the atmosphere. The person who has a well-organised personality, who has a centrality of will, is not so much affected by these imperceptible currents as the one who does not possess such a personality, or has no centrality of will. The child is like a tender plant that shakes with the least thrill in the psychic atmosphere about him. Hence he must be well guarded from all undesirable influences. The teacher himself should send out suggestion to him calculated to do him good. Let him have feelings for the child as Wordsworth had for the little girl when he wrote the following lines—

Dear child, dear girl, that walkest with me here,
If thou appear untouched by some solemn thought
Thy nature is not less divine
Thou hest in Abraham's bosom all the year,
And worship'd at the temple's inner shrine,
God being with thee when we know it not

It is this poetic faith in children that can improve them morally. For, then, the teacher will be a source of perpetual inspiration to them. He will mould their will through the subtle force of thought-suggestion in such a way that only good will flow out of them. "If you speak to a god," says R. W. Trine, "the god will respond, if you speak to the devil, the devil will respond and the devil is always to pay."

THE ROLE OF IMITATION.—Example teaches better than precept. More is learnt by a man through unconscious and conscious imitation than through instruction. Particularly in the moral sphere, example has a far greater value than direct teaching. If the teacher's habits are good, the child will unconsciously pick them up. Character teaches above the wills of men. Its effect is very silent; yet it is sure. Hence to improve the moral character of our wards we have to improve ourselves first. Children have an intuitive nature to detect goodness and vice in their elders. Things become known to them, however much we may try to conceal them. Let the teacher live on a higher moral plane and he will lift up all about him also. He has to be very critical about his acts. It is said, "Good comes at snail's pace and evil flies at eagle's pace." Hence one vice in the character of the teacher will spread faster than a hundred of his virtues. It will be made an excuse by every one to condone any defect of character that might lurk in him. An honest, loving, sincere, hardworking and courageous teacher creates a race of noble sturdy men by the very fact of his presence among his pupils. *Every one brings in his train fellows after his kind*

THE EFFECT OF PUNISHMENT—Judicious use of punishment is always helpful in the formation of character. We have discussed its efficacy in the education of the child before. Nature awards punishment for every wrong, thus it helps an individual to correct himself. The teacher accelerates in this natural process through judicious use of punishment. Punishment should always aim at reform and not at retribution. Vindictive or unsympathetic punishment is to be condemned. It has a very unhealthy effect on a child's character.*

*The writer came across the case of a teacher who was unsympathetic towards his pupils. He used to be vexed now and then. One day a boy took into his head to tease him in the class by creating some awk-

There are some boys who become mischief-mongers simply because they suffer from neglect in the school. To improve them suitable opportunities are to be provided so that they might show their ability and worth. Usually these boys do not excel others in intellectual work. But they are quite good at games and other extra-curricular activities of the school. The school authorities ought to arrange competitions in such activities, so that such intellectually less brilliant boys may have opportunities of winning applause of the public. Teachers ought to show a real and keen interest in all such activities, else they would not be valued by the boys themselves. The teachers should take part with the boys in games, gymnastics, scouting, dramas and excursions. Seldom will a teacher, who takes part in games and other activities of the boys outside the class-room, experience difficulty in controlling a class of so-called naughty boys. He is easily successful in winning such boys from doing undesirable acts. In lifting an individual morality it is not precepts but sympathy and personal touch that count most.

A good teacher secures the attachment of the brilliant boys of the class by his industry and scholarship and of the rest by taking part in those activities in which they outshine others. Though he himself may not be good at games, the very fact that he attends them and shows an interest in them goes a long way to win for him the affection of those boys who are good in games and who generally

ward situation. He took two of the books of his fellow-students and placed them behind a black-board. The boy whose books were removed reported the matter to the teacher when he came to the class. A search was made and some one suspected the boy who actually removed the book as the creator of the mischief. Soon there arose a great trouble in the class when the teacher also expressed his suspicion on him. It is exactly this thing that the naughty boy wanted. He began to defend himself and talk rudely to the teacher for accusing him of theft without sufficient grounds. The whole period in this way was wasted. The matter then was reported to the Head Master who had to punish the boy. The sub-conscious wish of the boy, however, was gratified.

form the naughty element of the class They understand that the teacher has a genuine appreciation of their worth and thus the impulse to put him to trouble is set at rest

We conclude, then, that moral character is an outcome of the exercise of free will. In childhood suitable disposition can be created for the formation of such a character Training in morality takes various forms according to the age of the child Formation of moral habits through suggestion, invoking the aid of imitation, through persuasion or preaching or even coercion have their place, but in the last resort it is through the exercise of one's free will that character develops This requires an enlightened understanding Hence the development of character implies the culture of the intellect as well as the emotions and the will of the child.

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- 3 Stout *Manual of Psychology*, Book IV, Chaps VII & X
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5. Green . *Prolegomena to Ethics*

CHAPTER XIX

MENTAL CONFLICT

THE UNCONSCIOUS MIND —During the last few decades Psychology has made tremendous progress in the study of human nature. A great many phenomena of human behaviour which were unintelligible before are now easily explained by the discoveries of the science known as New Psychology or Psycho-analysis. Psychologists, before this science came into being, used to study only the conscious states of human mind such as sensation, perception, imagination, judgment and reasoning. Little thought was given to those processes which go on at the level below consciousness. But thanks to the researches of Freud and his followers Jung, Adler, Jones, Ferenczy and others, our knowledge of the human mind is today very much extended. Now we understand that what is known as consciousness is only a fringe of the great human mind.* It is only a stage on which the action is shown, the preparation for it goes on behind the screen. If we want to understand truly the causes of human behaviour, it is to this hidden chamber that our eyes should be directed.

The unconscious mind contains the springs of most of our actions. It contains all our tabooed wishes, repressed impulses, forgotten memories and all those impressions which are supposed to be lost from the mind. They are the causes of dreams, errors and feelings of unrest in the normal mind. They also cause such abnormal phenomena as somnambulism, dual personality, melancholia, hysteria and several kinds of diseases of the body.

*The mind is compared by Psycho-analysts to an iceberg floating on an ocean. Only a very small part, say one-eighth, is visible since this much alone remains on the surface, the rest, being under the water, is screened from the review. So too a very small fraction of our whole mind is visible. This we call consciousness. Below it, screened from our view, are the great layers of the unconscious mind.

The unconscious mind, or the mind beneath the level of consciousness, has been conceived as made up of three parts—the Impersonal Unconscious, the Personal Unconscious and the Censor. The impersonal unconscious of a man contains the urges that he has in common with mankind, his personal unconscious contains his repressions or complexes as they are called. Censor is the mechanism of the mind that brings about this repression.

THE CENSOR —The censor represents the moral sense of the individual or his super-ego, built up through intercourse with society. There is a vast contrast between the real nature of a man and as he appears to himself. He appears to himself just as he would like to appear to others. This means that his mind, or moral self, prevents from emerging to consciousness all those so-called evil propensities which have been tabooed by society. But these repressed wishes do not die, they return back to the unconscious mind and remain there as discontented members of a state. They form combinations and are ever plotting to overthrow the power of the conscious ego. The censor is ever trying to hunt out all such undesirable wishes. The repressed wishes fear the eye of the censor, hence they dare not come out so long as the censor is fully awake and alert. But whenever the censor is off its guard, the repressed wishes come out on the conscious stage and try to satisfy themselves. Now this happens when we go to sleep.

ACTIVITIES OF THE REPRESSED WISHES

DREAMS —Dreams are thus produced due to these repressed wishes. According to Freud dreams are nothing but wish fulfilment. This is in agreement with the view expressed by Plato who said, "Saints content themselves with merely dreaming what the sinners do in their actual waking life." Dreams do not disturb sleep, as is commonly supposed, but rather guard it by allowing repressed wishes to have partial fulfilment. In order that a man may

enjoy undisturbed repose, some amount of fulfilment of these wishes is necessary. If there were no dreams, there would be no sleep.*

INTERPRETATION OF DREAMS—The repressed wishes, however, seldom come out in their real form even in dreams. They are afraid of the censor there too. Hence they assume disguises. Dreams are thus a symbolic gratification of our repressed wishes. Dream mechanism is very intricate. The *manifest*, or the apparent dream is very different from the *latent* dream or the dream as it really is. One has to learn the technique of interpreting the language of dreams or dream-symbolism, before one can understand the true meaning of a dream. In his book *Interpretation of Dreams*, Freud has shown how to interpret a dream.†

*"The function of a dream," says Dr William Brown, "is to guard sleep. Sleep is an instinct, like pugnacity, flight, curiosity, self-assertion etc. which has survival value, and has been developed in course of evolution. At night this instinct of sleep comes into play, but it finds itself in conflict with other instinctive tendencies, as well as with the assaults of external impressions through the senses. Desires, cravings, anxieties, the memories of earlier days, linked up with and sustained by the more elemental strivings of the organism, well up and struggle towards consciousness, while the main personality is in abeyance. If they reach clear consciousness, sleep is at an end, but the dream, which is a sort of intermediary consciousness, intervenes and makes the impulses innocuous so that sleep persists"—*Talks on Psychotherapy*, p. 35.

†Some important devices of dream mechanism are (i) Symbolism (ii) Substitution (iii) Transference (iv) Condensation (v) Elaboration. Children are symbols of genitals, wading through water, or flying through the air, or ascending a ladder means sexual intercourse. All this is dream symbolism. A man dreams that his uncle is dead. The uncle was dead long ago. It was on analysis found to be a wish to see his father dead. This is substitution. A woman dreams that she is being persecuted for something. In reality she wants to be persecuted sexually. It is an expression of the masochistic tendency. It is a phenomenon of transference. In a dream many unnecessary elements are mixed up and some important ones are omitted. This is due to the phenomena of elaboration and condensation in dreams.

Very often we forget our dreams as soon as we are awake or we remember some thing different from what we actually dreamt, especially those elements which might give a clue to repressed wishes. Through hypnosis the actual dream can be recovered.

Many people think that they seldom dream. The fact is that due to the presence of a strong censor in their waking consciousness they can seldom remember what they dream.

AUTOMATA —The repressed wishes come out not only in dreams but in other forms also during our unguarded moments. The several forms of automata—the washing ceremony of hands, the rhythmic movement of legs or thighs, mannerisms such as a peculiar twist of the face, holding a button while severely thinking, scratching the head, peculiar movement of shoulders are caused by repressed wishes. So too many slips and omissions and insertion of unnecessary matter are due to them. They also cause lapse of memory. All this occurs in normal minds.

DISSOCIATION OF PERSONALITY AND OTHER ABNORMALITIES —When, however, the repression is strong and there are many complexes or strong repressed feelings present in the mind of a man, a split in personality occurs. The government of the conscious ego is overthrown and then all forms of mental abnormalities appear. Somnambulism, dual personality,* hysteria, and different forms

*Here are two cases taken from Stout (*Groundwork of Psychology*, pp. 34-35) that illustrate very well the phenomena of somnambulism, and dual personality as well the importance of the repressed wish in causing them.

"A young lady in a state of somnambulism snatched a locket from her sister containing some of their deceased brother's hair. She resisted attempts to take it from her, and therefore hid it safely under her pillow. On waking in the morning she knew nothing of what had happened. When the somnambulism occurred a few days afterwards, she immediately began to look for the locket under the pillow. It had been removed in the interval. But she continued to search saying, 'It must be there. I put it there myself a few minutes ago.' Here there was an inward wish to possess the locket, but the moral self could not tolerate the idea of stealing it or somehow depriving her sister of it. Hence the phenomena of stealing the locket in the dream occurred. The reader may compare this case with that of Lady Macbeth who washed her hands of blood stains in somnambulism.

of insanity appear. The repressed wish may cause fixations, melancholia, and insomnia and general mental instability. Whenever there are strong repressions there is always a conflict between the conscious and the unconscious mind. There is much wear and tear of nervous energy. There is no health of personality and so there is no effectiveness in the speech or actions of such an individual. If education is to aim at the formation of a well integrated personality, it must see that in early childhood ground is not prepared for abnormalities or complexes of later life. An unhealthy individual can do no service to society, his life is a burden to himself. It is only by developing in children a habit of living balanced life that healthy personalities are formed.

CHILDHOOD AND REPRESSION

Childhood is the period when the field is prepared for the formation of complexes. The child naturally suffers from many repressions, and adults too mis-handle children. Some of their very innocent wishes are not gratified. Their inquisitiveness is smothered, and their effort at self-expression discouraged. Many unreasonable fears

The next is the case of dual personality. This is the case of a young American Lady "who became totally oblivious of her previous existence after waking from a deep sleep which had lasted some days. Her whole environment, including persons and things, was as strange to her as if she had been placed in it for the first time. She had to learn everything over again. Her progress was rapid. But she did not remember or recognise anything as belonging to her previous existence. This remained strange to her as if it had belonged to another person. A sleep like that which had initiated the change restored her to her original condition. But she was totally oblivious of all she had experienced in the interval. For more than two years there was periodic alternation of the two states. If in one of these states she had come to know any person, she had to renew her acquaintance with him, when she passed into the other."

We do not know the actual cause of this split in personality. The lady obviously was not subjected to Psycho-analytic treatment. The interested reader may go through Prince's admirable work on this subject called "*The Dissociation of a Personality*".

are communicated to them in our effort to control and quieten them or to arouse interest in our talk. All this tells badly upon the mental health of the child. The child in the womb even, is affected by the thoughts of the mother, how much more so must it be true of the child who lives and moves amongst us? Likewise a great many cases of the delinquencies of children are really due to the impressions which they receive day to day and the repression from which they have to suffer due to our false notions of bringing them up. In spite of what Rousseau said, we have implicit faith in the doctrine that the innate nature of the child is not good and that we have to reclaim him from his worse self. Hence wherever we note cases of neglect of study, disobedience, stealing, lying, bullying, and teasing other children, we resort to corrective measures in the form of severe punishments, which in a number of cases not only fail to correct the offender but further aggravate the malady. It is here that Psycho-analysis has proved itself capable of doing immense good to humanity. It has effectively changed our conception of human nature, shown the true cause of the child's straying away from the right path and given a method of successfully reclaiming him. The personality of many a noble child is spoilt and his career ruined due to our not understanding his inner wishes, his repressed emotions, and his true needs. The stupid look that the children sometimes present is due to the neglect from which they suffer or the un-sympathetic treatment that they receive either at home or at school.

RETARDATION IN STUDY —Anna Freud in *Psycho-analysis and Education* has given a peculiar case showing the ill effect of repression in study.

"An excellent teacher began her career in her eighteenth year when, in consequence of unhappy family circumstances, she left home to take post as a governess of three

boys The second boy presented a serious educational problem . He was backward in his lessons, and appeared very timid and dull , he played a subordinate part in the family, and in contrast to his two gifted and attractive brothers was constantly pushed to the back ground The teacher devoted all her effort and interest to this boy, and in a comparatively short time had obtained a wonderful success.

“The boy got fond of her and was more devoted to her than he had ever been to anybody before and became frank and friendly in his ways His interest in the lessons increased, and by her efforts she succeeded in teaching him in one year the subjects laid down for two years, and thus he was no longer behind in his work The parents became now fond of this child, whom until then they treated with slight affection and they took much more trouble about him , and his relations to them and also his brothers improved, until the little boy was finally accepted as a most valued member of the family circle Thereupon an unexpected difficulty arose The teacher to whom the success was entirely due began now on her side to have trouble with the boy She no longer gave him any love and could not get on with him Finally, she left the house where she was greatly appreciated, and on account of the very child who had been in the beginning the centre of attraction o her

“The Psycho-analytic treatment which she underwent fifteen years later revealed to her the true facts of the case In her own home, as a child, she had, with more or less justification, imagined herself the unloved child—the same position in which she found the second boy when she began her work with him On the ground of similar slighting treatment, she had seen herself in this boy and had identified herself with him All the love and care which she had lavished upon him meant that

she was really saying to herself, "This is the way I ought to have been treated to make something out of me." Success, when it came, destroyed the identification. It made the pupil an independent being who could no longer be identified with her own life. The hostile feeling towards him arose from envy, she could not help grudging him the success which she herself had never attained."

Psycho-analysts have examined many cases which have profound educational significance. They show that neglect and lack of sympathy often kill all initiative and the spirit of adventure in the child. The unconscious mind hungers for love and where this is denied life becomes insipid and colourless. In most cases the individual who has the misfortune of being brought up in an atmosphere of apathy, appears before the world as a very feeble minded, bloodless being. Excessive mental strain or discipline has very undesirable reactions*.

INFERIORITY COMPLEX AND SENSE OF GUILT — Psycho-analysis tells us that a child whose natural cravings are constantly repressed can seldom grow into a strong and effective personality. He remains timid, shy and haunted.

*This truth is well illustrated by the life of King Edward VII as cited by Dumvile in *Child Mind* (page 235). The king scarcely read anything beyond periodicals, he could not interest himself in serious works. Now that his biography is available to us, we discover the cause of this superficiality. His pedantic father wanted to make him learned too early and he prescribed a large number of subjects for study. He was denied the society of congenial persons of his own age and every moment of his youth was to be devoted to the improvement of his mind. The child had great respect for his father, hence he kept on reading the books prescribed for him. "But deep down in his nature," says Dumvile, "there was probably a system of emotions, tendencies, habits, and vague ideas which constituted a dislike hidden from the subject himself." His interest in the literary pursuits was dissipated and his early overstrain resulted in a permanent disgust for studies. "God evermore screen us," says Emerson, "from premature ideas." Let there be an inward craving in the boy for any kind of knowledge and then its reception will be easy, natural, and pleasant.

by a sense of guilt all his life Here is an example from Anna Freud's book *Psycho-analysis and Education*

"I know a boy who was extremely fond of dainties in his earliest years As his passion for dainties was too great to be satisfied by legitimate means, he hit upon all kinds of unlawful expedients and dodges in order to procure sweets, spent all the money he possessed upon them and was not too particular as to how he procured them. Education was called upon to act, the boy was forbidden sweets His extreme fondness for dainties disappeared, to the great satisfaction of his elders. But today this lad, now an adolescent who has plenty of money at his disposal and the freedom to buy all the sweetmeats of the Viennese confectionary shops, is not able to eat a piece of Chocolate without blushing furiously Everybody who observes him is at once certain that he is doing something forbidden, that he is eating things bought with stolen money " This sense of guilt later characterises all the activities of the grown up man and makes his great ventures, enterprises of feeble resolution. Thus in their effort to make him good his educators do incalculable harm All this is due to ignorance of the unconscious working of the child mind

DELINQUENT BEHAVIOUR —Abnormal behaviour of many a child has been found to be due to some complexes in their minds Psycho-analysis has very satisfactorily explained a number of cases of child's delinquencies in conduct Boasting, spoiling the articles of the school, stealing, bullying, teasing children, and smoking are phenomena too common in schools

A child who has been denied the cherishing love of his parents will usually grow up as an abnormal person Such persons have a tendency to trouble others They develop, if not cured, homicidal or suicidal tendencies The life of

Robert Clive is illustrative of this. He was an abnormal person. He thrice attempted to commit suicide and died also by it. From what we know of his childhood, we infer that his early life was not a happy one. He, probably, did not receive the usual parental affection from his father. This developed in him a tendency to do things which would annoy the father and receive punishment from him. When love is denied to children, the unconscious impulse gratifies itself, as Schuler points out, through receiving punishment. Clive, as a young boy was a distinguished mischief-monger. He would gather together all the vagabonds of the village and tease the village people in every possible way. He received his due deserts for it, but this seems to have simply whetted his desire for roguery. His parents being tired of curing him sent him out to India by way of punishment. In India, however, his dammed *libido* found proper channel for its flow and he became a great leader in no time. He was a very daring person and won victories after victories and is now acclaimed as a great hero. Had he remained at home in England he might have spent his life in jail as a criminal. When the ego is not able to effect changes in the environment so as to satisfy the inner cravings of the individual, we have a case of a criminal, when such changes are effected, we have a case of a hero. "The possibility of the ego system," says Paul Schuler, "to effect changes in reality will decide whether we deal with a criminal action or with a heroic deed. We have no doubt that these actions are based on the libidous development of the individual."

The delinquencies noted above are not due to perversity of will in the child or congenital moral defect. Of course, there are a number of cases in which the difficulty arises from the fact that the inhibitory power of the super-ego or moral self is congenitally weak. But there are many other cases in which such phenomena are solely

due to inner conflict. They are the outcome of a complex trying to seek expression. The desire to make a display of ones activities, to attract the attention of others by doing something conspicuous is in itself a very healthy or laudable tendency.* This same tendency when it does not find a right channel for expression takes a wrong inverted course and becomes the source of the mischievous activities of children.

BULLYING AND TEASING.—This may be due to the reactions of either the ego complex or the sex complex. The child suffering from neglect becomes a bully † He takes to teasing the child who is admired by the teacher. He cannot excel him in school work, but he is jealous of him. Hence he takes to teasing him and bully other children. He, in other words, says unconsciously to the authorities, that I am some one in particular, you must take note of me. Had the child found scope for self-expression in school activities, had the authorities appreciated his abilities, he would not thus have turned a rebel. There are some children in whom teasing others is nothing but a form of *sadism* and they require psycho-analytic treatment.

SMOKING —The habit of smoking may have been contracted from elders due to sheer imitation. Of course

*Steele's observations in this connection deserve our attention. "The motive of this monstrous affection, in the above mentioned and the like particulars, I take to proceed from that noble thirst of fame and reputation which is planted in the hearts of all men. As this produces elegant writings and gallant actions in men of great abilities, it also brings forth spurious productions in men who are not capable of distinguishing themselves by things which are really praiseworthy. As a desire for fame in men of true wit and gallantry shows itself in proper instances, the same desire in men who have the ambition without proper faculties runs wild and discovers itself in a thousand extravagances, by which they signalise themselves and gain a set of admirers."⁵ *The Spectator*, Essay on Fashionable Affectations

†Stern: *Psychology of Early Childhood* p. 544.

this happens normally. But it may also be an expression of a wish to show oneself off. Smoking is a privilege of the elders, who through this act in a way show their superiority to children. Children long for the day when they would no longer be regarded inferior to the elders. At times, smoking, according to psycho-analyst's, is but symbolic sex gratification. Thus it represents a suppressed sex desire and where this is the case smoking becomes not only an intoxicant but a mania for the child.

STEALING.—Stealing is not always due to a desire on the part of the child to possess the object. The stolen object may have little value for the child, yet the child steals for the very acts yields pleasure. Psycho-analysis has discovered that the act of stealing in some cases is connected with sex repression. The child feels a sort of compulsion to steal. The satisfaction derived from the act is of the nature of orgasm. Thus children who have contracted the habit of self-abuse easily get into the habit of stealing when the former tendency is repressed. Kleptomania is thus an outcome of a repressed sex desire or complex. Some children steal the articles of their play-fellows in order to tease them. This is an expression of the *sadistic* tendency, a tendency to inflict pain on the object of love. It is a form of sex perversion. It may also be an expression of an unconscious sex jealousy. Such cases have to be analysed and sympathetic treatment ought to be meted out to children suffering from them.

LYING.—Lies are sometimes told in order to produce effect on the minds of the hearers. Everyone wants to attract attention of others to himself and be admired. When only the truth is told, nobody cares for the child's statements. Hence he invents lies. There is story of a girl who told her teacher that her mother was ill. The teacher sent a letter to the mother of the girl expressing her sympathy and good wish. After a few days the girl

told the teacher the mother had become quite well. Sometime after the teacher met the mother and asked about her health and her past illness. To her surprise she learnt that the lady did not fall ill at all. Everything was the invention of the ingenious child, who had invented the lie to make the teacher anxious and draw her attention to herself.

Fear of punishment also causes children to tell lies. Lowinsky points out that the habit of lying has a certain correlation with unsuitable surroundings i.e. it is a weapon of defence, when the individual is oppressed by an uncertain, wavering, too complicated and difficult environment. Hence it is easy to understand why children who are subjected to stern treatment and repressive measures are so prone to lying.

A repressed wish brings about *abnormal lying*. Abnormal lying has been an object of special interest of the Psychoanalysts. It is lying "that is wholly disproportionate to any discernable end in view. In character it is usually complex, and in origin seemingly motiveless, impulsive rather than planned, and so repeated and sustained in duration as sometimes to extend over many months and years"*.

Cyril Burt cites the case of abnormal lying by a girl 9 years 7 months old. Her father came of a respectable family, but not her mother. She came of a poor family and had been divorced by her husband for misconduct. He had married a second time and got a baby by his new wife. The girl in question was a very well behaved girl in the school and was loved and liked by the teachers. She was also loved by her father.

*Cyril Burt. *The Young Delinquent*, p. 388.

Now this girl used to send letters to her father in which she accused him of misconduct and used foul language. The letters were written in bad handwriting and on filthy paper. Some letters were sent to other persons which told them that Mr Naylor, the father of the girl, was having illicit connections with their wives. They were signed as May Naylor, who was the former wife of Mr Naylor. Mr Naylor got many times into troubles due to these letters. He did not know as to who wrote them. He could not expect his innocent daughter of writing such letters. He, therefore, handed over the case to a detective.

The detective suspected the girl to be the writer. But when he made enquiries in the school, he found that the girl wrote beautiful handwriting and none of the teachers could identify the writing on the letter as the girl's writing. Moreover she was reputed to be very well behaved and never used any foul language. The detective could not make out the case. The letters, however, went on pouring in. The suspicion on the girl increased mainly due to the step mother's malevolent accusations. Then it was thought proper to refer the matter to a psychologist.

Cyril Burt came to know of the case. He took the girl into confidence. The treatment began. In one of her hypnotic states she confessed what she had done. The case was really complicated. "One evening," says Burt, "I showed her an unopened envelope, sent on to me from her home. In her trance-like condition she could recite, word for word, every item that the letter contained. It had been written, she explained, in the lavatory, stowed away in an undergarment, and stamped and taken to the post by a triumph of manoeuvring. Next week, in her waking state, she repudiated the whole thing, protesting with bitter tears that she knew anything of it, utterly

oblivious that she had confessed all that the last communication stated and how it had been composed ”*

In this case there was a split in personality. She had begun signing in her open correspondence with a new name—the name given to her by her mother. Instead of signing May Naylor she signed May Lomax. This was due to the fact that she did not like to be named after her father’s surname. There were two minds in the same body. “Behind the visible May, says Burt, “was an invisible May,” their natures were exactly opposed. The one was frank, the other cunning, the one was affectionate the other mean, the one was fastidiously correct and scrupulously pure, the other coarse, revengeful and foul-mouthed.” Thus it was a case of dual personality.

Cyril Burt had to find out the cause of this split. He became intimate with the girl and allowed her to talk in the manner she would talk to herself. His aim was to reintegrate the child’s personality through bringing the unconscious complexes to the level of consciousness. In the course of the talk Burt discovered the hidden roots of the child’s abnormal conduct as they floated gradually to the surface. She had loved her mother so intensely that she could not believe in anything evil about her. She would never like to think that her mother was of bad character. Anything against her mother she would shut away in some back cupboard of her mind. She had resented her father’s remarriage severely and when the father transferred his affection for her to his newly married wife she was goaded to great fury. These feelings she had tried to suppress, but in her unguarded moods the wicked feelings came and took possession of her unawares. She knew that her father was fond of writing letters and receiving them from friends. Her revengeful soul found in this an ingenious device of punishing the father who

*Cyril Burt *The Young Delinquent*, p. 388.

had done so much wrong to her mother and herself. She used to write these letters in a handwriting which she had learnt earlier than she had entered the school. Hence the mistresses even could not identify the writer of the letter. From her father's talk she learnt that the punishment would be more severe to the father if the letters were sent to his friends and employers. Hence she began to write letters, accusing the father of all kinds of immoralities, specially of immorality pertaining to sex relations, which were intended to spoil his reputation as a decent person.

The treatment she received from Cyril Burt, in course of time, cured her of the disease. As the girl unfolded the autobiography of her soul, the moods and evil impulses began to diminish and at length to disappear. There were many difficulties in the course of the treatment. But Cyril Burt patiently persisted and he was able to break down the barricade between her two contending personalities. This was done by bringing the one personality in communication with the other and the two were synthesised into a single harmonious whole. When this was done the normal personality did not remain as *prim* and proper as it previously seemed. But the abnormal secret personality which was responsible for writing jealous and vindictive letters vanished for ever.

NEW PSYCHOLOGY AND DISCIPLINE

In the light of what is said above with regard to the researches of psycho-analysis, we shall have to rethink on the problems of discipline in Education. All serious educational thinkers have condemned excessive external restraints put on the freedom of the child. The Herbartian notion of discipline is that it should grow from within and not be imposed from without. The only

justification for any kind of discipline is that it awakens the moral sense of the individual. If it fails in doing this, it stands self-condemned. The moral sense of an individual, however, is a matter of slow process of growth. As Lord Lytton, in *The New Treasure*, points out, we cannot impose a conscience on a person, we can only impose our prejudices on him. A conscience cannot be grafted on the mind of the child, it has to grow from within. We have to enable the child to control his impulsive nature by his rational nature. As his reason develops, he would be able to control his instinctive urges more and more. Reason, as pointed out by Aristotle, has a dual function, on the one hand, it is a faculty to think and thus to know the nature of the real, on the other, it is a faculty that governs the impulses of man*. The two powers of reason develop together, as the child knows more about his environment and learns what is good and what is bad for him, he is able to act in accordance with wisdom or moral laws.

There are, however, persons who believe that no sort of discipline whether internal or external is desirable. The external discipline, according to the extreme Freudians, is not so harmful as the internal discipline. They think that the sense of self-restraint has its origin in fear—the fear of punishment. This fear has, in the last resort, an external origin; fear that is internalised becomes the *conscience* or the *Super Ego* of the individual. If external restraints are bad, so are the internal, for the one is rooted in the other. There are some literary writers who would wish

*“The rational faculty can be exercised in a twofold manner. The human soul has, besides the ‘rational part’ which marks it as human, an ‘appetitive part’ which it shares with the beasts, and a ‘vegetative part,’ which it shares with all living things. The vegetative part cannot be controlled by reason, but the appetitive part can be so controlled. Reason, thus, has a potential ability not merely to engage in reflective contemplation of the universe, but to control the impulses as well”—Philip Wheelright: *A Critical Introduction to Ethics*, p. 204.

to get rid of conscience. It is what makes us miserable. Stevenson would like it to be silenced for ever. According to Freudians, there would be no problems of personality, the formation of complexes, and the resulting mental conflicts, if people were trained to live a free life and be not guided by social prejudices, opinions, traditions or laws. The prejudices and traditions of society become the conscience of the individual, they are imposed upon the individual by society through fear of some form. A man suffers because there is conflict between his inner wishes and the moral taboos which have been owned by him and which have thus become a part of his nature. The *Super Ego*, thus, is a great tyrant and if its control is too strict the resulting personality is abnormal.

This would mean the freer a child lives the better will he grow. Will such a child be a useful personality? Will he represent civilized life?—these are questions which the Freudians will not trouble themselves about. All civilization is a result of the control of the natural urges. If all the urges of human beings are allowed their full gratification, there will be no conflicts of personality, no doubt, but at the same time human beings will be reduced to the level of brutes.* As a matter of fact, one

*Dumville, in this connection says, "At the same time it must be borne in mind that complete freedom is impossible. We wish the child to accept cheerfully the necessary restrictions of civilized life and to take as much responsibility as he can manage. By all means let us govern without harshness, suggest rather than command, and lead rather than drive. Let us, above all, try to find out these things which are useful and which the child can and will do without compulsion. But let us remember that if the stream is to be of service in doing useful work, its waters must to some extent be controlled. In some cases the youthful psyche, try as we will, does not respond to our suggestion. In such cases, if the child is left entirely free, "psychical gravitation" will keep it permanently on a low level, not only of knowledge and skill, but—what is still more to be deplored—of morality. *Some amount of compulsion will at times be necessary.* If it is wisely applied, in full sympathy with and understanding of the child's inner nature, there is every prospect that it will be successful in achieving its object without harmful consequences"—*Fundamentals of Psychology*, p. 417

of the conditions of a highly civilized life is conflict. Are not the products of civilization a sufficient compensation for the mental pain we suffer due to the conflict of the Unconscious with the Super Ego? "Suffering," says Arthur Helps, "is the lot, the pride and the privilege of man." Man can reason, so he knows all the wonders of the world, he has immense power to conquer the brute world. But that very reason makes him torture himself, for, the moral sense, as pointed out before, is rooted in reason.

When we assert that conscience is rooted in reason, which is an essential part of man's nature—rather the unique part—we do not deny that conscience develops through the contact of the individual with society. Our conception of the individual precludes us from thinking that he stands in any way opposed to society. Society and the individual are so inextricably mingled with each other that the one cannot exist, nor can it be thought of, without the other. Society is nothing but the individual writ large, and the individual is a social force expressing itself through a particular point*. To take the Platonic view, there is nothing in society which is not to be found in the individual, and there is nothing in the individual which is not a gift of society. Such being the relation of the individual and society, the restrictions imposed on the former by the latter are proper and they are the

*"Man is a bundle of relations, a knot of roots, whose flower and fruitage is the world"—Emerson. The society and the individual, according to Emerson are the correlatives of each other. "Mind is one and Nature is its correlative," says he in his essay on History. Hence the restrictions that society imposes on the individual are really the restrictions imposed by the individual upon himself. It is the higher self-governing the lower self. There is a great truth in the doctrine, propounded by Hegel, that the thief is really free when he is sent to jail, or it is the divine right of the culprit to be chastised. When society exercises such a right it has a justification in the fact that it is doing the individual good. The individual, in fact, does good to himself in this way through society.

only conditions for the growth of a healthy personality. If discipline is removed from society, if the individual remains unaffected by the ideals which society wants to implant in him, society will cease to be a spiritual entity. It will be a chaos. No social life is possible without restraint being put on one's self from without and within, and in the absence of social life the individual cannot grow. Here is a justification for the society's imposing its will on the individual to such an extent that it becomes a part of his own nature in the form of the Super Ego or the conscience.

We may, however, go a little deeper. The Super Ego is innate and hence the restrictions of the Super Ego are really no restrictions. It is the government of the self by the self. Self-government is the only condition of a happy and healthy life. It is true that the Super Ego develops through social contact, just as thought develops through social contact. But neither the one, nor the other is a social product or an imposition by society in the sense the psychoanalysts understand it. We would not be able to think, if the faculty to think were not innate in us, so, too, we would have no Super Ego or conscience if human beings themselves by their inherent nature, were not so formed as to hanker for moral values. Just as in the seed there is potentially present the tree with all its leaves and flowers, so, too, in the individual the power to recognise values which he is destined to realise in life, is potentially present. The moral sense is present in the embryo from the very beginning in each individual, it simply becomes fully manifest as he grows. Society simply suggests to the individual the values that it has found best, which have stood the test of time and which, therefore, requires to be conserved. The child is a spirit with an infinite past and infinite future and not a mere product of a set of conditions. The affinity, as Emerson points out, between the individual and the society is spiritual.

Hence, to condemn discipline as such on the score that it, at times, results in mental conflict, is to undermine those very conditions which made such a statement possible. The educator has to enable the child to develop discipline from within. He should not aim at stifling all sense of discipline. It is true that external discipline is a condition of the growth of internal discipline. This is usually taken to be the ground for the condemnation of both the kinds of discipline. What the educator has to aim at merely is, that the external discipline is so imposed, that, in course of time, it becomes unnecessary, as the individual has learnt to govern himself. All kinds of punishments have their justification in the fact that they save the individual from greater harms. They enable him to act with prudence so that no suffering follows his acts. He learns the lesson of self-control and self-reliance through the ordeals that he has to undergo.

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CHAPTER XX

STAGES OF MENTAL DEVELOPMENT

In the previous chapters we have outlined generally the mental development of the child and have pointed out that the development can be advanced by an effort on the part of the adults. In this chapter we shall try to mark out clearly the various stages of this development from the erratic, impulsive child to the well reasoning adult.

The earliest effort at marking out the stages of development was made by Rousseau. He divided the development of the child in four stages—infancy, childhood, adolescence and maturity. The education of the child in each of the stages is different from the one in other stages. Dr. Earnest Jones has also pointed out recently that there are four stages in the development of the child. The first stage is infancy, it lasts up to the age of five. The second stage is called late childhood, upto the age of twelve. Then comes adolescence which lasts upto eighteen. The final stage is maturity, which is eighteen onward. According to Jones the development of the child is not of the nature of continuous growth. The child grows unhampered upto twelve, when he reaches pseudo-maturity, just before puberty. Then a period of recapitulation takes place till maturity comes. Thus adolescence and adulthood, are recapitulations of infancy and late childhood. The individual lives again on a different plane, the phases he has passed through in earlier life. Dr. Jones bases his argument on sexual development which he holds is true of mental development as a whole. In the following pages we shall briefly deal with the first two stages and dwell at same length on adolescence which is the most important stage from the point of view of the educator.

INFANCY

The child in infancy is like a sprouting plant. He is tender both in body and mind. His life is mostly guided by instincts which clamour for immediate satisfaction. He has no experience to guide him in his life, hence intelligence which grows as experience grows, is lacking in the infant. He cannot inhibit his impulses, this requires thought and strength of will, which come only at a later stage. His conduct is motivated solely by instincts and modified by pleasure and pain. If a child sees a burning taper, he rushes to catch it, but when once burnt it withdraws itself at the sight of the fire. The burnt child, thus, dreads the fire. Each impulse of the child acts independently of others, as they are not as yet controlled by the personality as a whole.

The life of the young child is characterised by dependence on elders, both for the physical and emotional needs. When hungry or hurt, he cries for the mother. He would not care to search out food for himself or remove the stimulus of pain. Similarly the child demands that all the love of the parents should be directed to himself. The child is very aggressive in owning the love of elders. If there are two children in the same house, both at the stage of infancy, the one will not allow that any of the parents should fondle, kiss, or show anxiety for the other. The advent of a new babe in the family is always attended by periods of emotional conflict in the mind of the elder child. Some times this emotional conflict has very evil results. It may result in retarding the development of the child. We have pointed this out in the chapter on Mental Conflict. The elders have to be very careful in showing their love towards their children. They should never show partiality to any child, else the other children will harbour feelings of enmity towards the favoured child.

The child was formerly supposed to have no sexual life. Recent studies, however, show that sex plays quite an important part in the life of the child. According to psycho-analysts, the sex life of the child is exceedingly rich and varied both in physical and mental aspects, its manifestations resembling those of primitive man. Four stages have been marked, as previously pointed out, in the evolution of sex-consciousness of an individual. These are the auto-erotic stage or the stage of self-love, the Oedipus and the Electra complex stage or the stage of the love of parents, the homosexual stage or the stage of loving an individual of the same sex and the heterosexual stage when persons of opposite sexes are loved. In early childhood the individual goes through the first two stages of sexual development, the latter two stages are normally gone through during adolescence and maturity.

Infancy is an age of auto-erotism, or self-love. This is called "Narcissism" by the psycho-analysts, after the mythical Greek boy Narcissus, who fell in love with his own image seeing it in water. In this legend the psycho-analysts read the universal tendency of man to fall in love with himself. Normally this self-love stage passes off at the close of infancy, but it may linger on in exceptional circumstances to later childhood and adolescence. All excessive admiration of oneself, that we find in adults, according to psycho-analysis, is a reaction of the Narcissus complex. It is a sign of retarded mental development.

In infancy the child is imitative rather than original. Thus he learns language from the adults by imitation. The early plays of children are a bare imitation of the activities of the elders. The child likes to express himself at all stages of his mental development, the form of expression being determined by his environment. This is much more so in early childhood than in a later period, when the child becomes inventive.

In infancy the instinct of construction is quite active. The child is ever manipulating objects, breaking them or putting them in different orders. Hence parents should provide infants with many play-things. The child learns many elementary lesson of his life through his desire to imitate others, to manipulate objects and to play with them. In this process children who live with other children of the same age have an advantage over those who live alone, for the best companion and the best teacher of a child is another child of the same age.

LATER CHILDHOOD

Later childhood is a period of rapid growth. The child attains at the end of this stage pseudo-maturity. By this time he achieves a degree of adaptation to environment which enables him to live in harmony with those around him. During adolescence he is said to lose this adaptability and regain it at maturity.

At this stage the child's thirst for knowledge shows a sudden increase. He becomes very inquisitive. The instinct of curiosity is at its best. The child asks many questions of his elders. These questions look silly to us, but they have a great significance to the child mind. They show that the child has begun to think. During infancy the child's power of thought remains very limited, for he has not yet mastered the instrument of real thinking. The infant's thinking is mostly at the perceptual level, as is the case with the thinking of animals. He has no power to think of the past and the future. The power to think of the past and the future implies the use of words. It is only when the child has mastered a certain amount of language that he attains the power of thinking of what is not present. The infant easily forgets the past, the child will not forget it, for he has an instrument with whose help he can stabilise experience. The infant can

simply ask the question "what is this," it is only the child who can ask the question "why it is so?" Making use of the casual category in thought implies the development of time sense which is impossible without a certain degree of mastery of the language

The child's questions require to be answered by the adults. The child whose instinct of curiosity is repressed at this stage will hardly show originality and initiative in later life. The intelligence of the child develops as urged to exercise itself by the instinct of curiosity. Curiosity is an expression of the child's inner demand to adjust himself to the environment.

The child at this stage becomes more and more inventive rather than imitative. This is to be seen in his plays. He no longer plays *beside* another child, but plays *with* him. He does not mechanically imitate what another child does but thinks out his part. The child is to be engaged in such plays as require the exercise of his inventive power. His games are not individual, as is the case in the previous stage, they are social. He likes to play with other children and share in their joys.

Gregariousness is one of the well-marked characteristics of later childhood. In his early years the child seeks the company of the elders chiefly as a means of self-gratification. The infant is sublimely selfish in all his doings. But now the herd-instinct shows its rise. Even for his self-assertion he seeks the company of others. He becomes a member of a band or a gang. The gang has a solidarity of its own: the members of the gang remain faithful to each other in all their difficulties. They are together in their joys and sorrows if there be any. All gangs of boys are organised. There are captains, vice-captains and other officials to direct affairs of the gang and to enforce discipline. The most self-assertive boy

becomes the leader of the gang. Robert Clive, Napoleon, Moussolini were such leaders of gangs in their childhood

The infant has no moral nature. Moral consciousness follows on the footsteps of social consciousness. The infant has not as yet developed a social self. The child, on the other hand, has a social self, hence, he is guided in his conduct by certain moral codes. "His behaviour is determined largely by anticipation of social praise or blame, the chief authority being the gang"* The moral code in this period is very powerful and uncompromising. The child would obey the leader of the gang whatever may befall. This sometimes brings him in difficult situations. The authorities at home, and in the school often find it difficult to correct a child who belongs to an undesirable type of gang.

One of the important characteristics of later childhood is the child's extrovert mentality. He has an outward-look. He thinks more of objects and situations surrounding him than of himself. This is just like the attitude of a healthy minded adult. The adult's attitude, however, is final; the attitude of the child, on the other hand, undergoes a change when he enters the next stage, that is, the stage of adolescence.

The sex life in later child does not present as difficult problems as the life of an infant or of the adolescent does. Psycho-analysts regard the age between four and five years as very critical. Many complexes are formed during this period, which cause great difficulties in later life. There are no such critical stages in later childhood. The child being extrovert rather than introvert does not brood. He is active, hence there is no chance of the development of complexes. The child passes the stage of Narcissism; his love is gradually directed to persons other than himself.

*Ross - *Groundwork of Educational Psychology*, p. 145

He normally loves more the parent of the opposite sex. This gradually yields' place to the love of children who are associated with him. According to Jones the sex impulse hes dormant in later childhood

ADOLESCENCE

Adolescence is the most impressionable period of a child's life, it is the period when the first dawn of power is felt by him. It is a period of day-dreams, of adventure, of intense affections and stirring of the heart. The child's emotions are most excitable at this period and at a very small suggestion we find him prepared to do even the impossible. He is subjective and does not know the objective limitations of his power. His mind is pure and holy, he loves every one and he does not suspect wickedness in others. He has not as yet learnt to direct his energies aright and therefore, there is a danger of his going on the wrong path, bringing ruin on his life.

As the child enters adolescence there are marked changes both in his bodily appearance and inner life. Adolescence is the most interesting period of a man's life from the point of view of the educator. The emotions, and impulses of the child have an uniqueness which are to be found in no other period of his life. We shall note here a few of the characteristics of the mental life of the child at this period and shall suggest how the child can be best handled so that his growth may not be impeded.

BODILY APPEARANCE —The adolescent child is body-conscious. Whereas the child in the earlier period is careless about his appearance, the adolescent takes particular care of presenting himself nicely before others. He loves to decorate his person. He is fond of good dress and is highly self-conscious. He is touched by the criticism of others about his manners, his dress or general appearance.

All this contributes to make the body appear graceful. The physical development itself makes it very attractive at this period.

There is a distinct change in voice which shows the advent of maturity. The voice of boys and girls in the earlier period have no distinct sex quality, but in adolescence the voices of the two sexes differ. The boy's voice becomes hoarse, the girl's remains a bit shrill.

GROWTH OF MOTOR POWERS —As the body of the child grows and he gains balance, the motor powers also increase. The child is fond of sports and games. This is quite in keeping with their physical development. Drill, gymnastics and manual training are of great help in developing the motor power of the adolescent. All kinds of plays are to be encouraged among boys. "All are young," says Stanley Hall, "at play and only in play, and the best possible characterisation of old age is the absence of the soul and body of play. Only senile and over-specialised tissues of brain, heart, and muscles know it not."* The best means of developing free motor activity is play.

Dancing for children is strongly advocated by psychologists who have made a special study of adolescence. "Dancing is one of the best expressions of pure play and of pure motor needs of the youth. Perhaps it is the most liberal of all forms of motor education."† The adolescent loves the rhythm. Hence children of this age like to sing, march or read poetry with rhythm. Dancing involves rhythmic movements, this makes it specially liked by the adolescent.

All kinds of outdoor activities are to be encouraged among the adolescent boys and girls. This is good both

*Stanley Hall *Adolescence*, Vol I p 206.

†Ibid, p 213

for the development of their physical powers as well for stopping them from brooding, which is a marked characteristic of the boys and girls in this period

SEX IMPULSE —The dawn of adolescence is marked by a special consciousness of sex. It is the awakening of this instinct that makes him so restless, and romantic in interests, speech and behaviour towards others. We have to watch carefully the development of this instinct and give it a proper mould. Parents and to some extent teachers are prone to evade the heavy pedagogical responsibility raised by this very delicate and difficult subject. Hence in no other field of importance do silence and indifference come so near reigning supreme

Children at this age *develop many complexes* due to premature indulgence in sex and due to sudden repression of the same. Their nervous system is weakened and they develop many mental diseases. Their sharpness of intelligence vanishes and their faces look pale and stupid. But these injuries are not so great, for, in course of time, the child can regain both his physical and mental power, when he ceases to indulge in his abnormal sexual activities. The greater dangers, and by far the more enduring in life are the formation of the mental complexes due to self-abuse and other different forms of erotic behaviour. They give rise to mental phobias, anxiety-neurosis, melancholia in which the individual is haunted by a sense of sin, and thinks himself lost beyond redemption.*

*"Consciousness of vice," says Stanley Hall, "so hated and despised is a potent factor in the youthful melancholia, taking away the joy of life, and sometimes plunging the victim into a sense of discouragement culminating in utter despair. It is one of the causes of morbid type of self-consciousness or introspection. The struggle between what is felt to be right, pure, honourable, and the lusts of the flesh are always hard for sanity—struggles for absolute purity and perfection germane to this age are met by the influence that seem to spring from the Prince of Darkness and his abode." Stanley Hall—*Adolescence* Vol I, p. 438.

Thus the lack of proper education leads the young soul to great mental agony and suffering. Due to the internal conflict there is a great wear and tear of the nervous system, and the life of the boy in later years is characterised by irresolution and weakness of will. He lacks energy and can do nothing effectively. One whose sexual urge has been altogether misdirected suffers from many mental diseases. Abuse of sex is a fruitful *source of juvenile faults*, immoralities, and crime. The tendency to commit suicide is also an outcome of the abuse of sexual energy.

How can we prevent this? Stanley Hall points out two kinds of causes that lead to sexual excitability—physical and mental. The physical causes are improper clothes, rich food, indigestion, overwork, nervousness, habits of defective cleanliness, prolonged sitting or standing, monotonous walking, sitting cross-legged, late-rising, petting and indulgence and too great straining of the brain. Prominent among the mental causes are erotic reading, attending pictures and theatrical performances. The guardian of the adolescent has to guard his ward against these. Certain drugs as cocaine and opium and intoxicating drinks have a stimulating effect, so also certain perfumes, over-eating, fondling, fear, and rocking chair predispose the mind to sex.

We can now easily realise the value of the hardening process of Locke. He would allow children only two meals a day, and barred them from taking not only spices but even sugar. A rigorous life is helpful in maintaining celibacy. Stanley Hall advocates cold washing without wiping. Cold is one of the best checks on sexual excesses. "The Sparton boys, at twelve," says Hall, "slept on straw or hay with no cover and at fifteen slept on reeds. The body in general, and specially the head, hands, and neck, should not be too warmly dressed in cold weather. Beds should be rather hard

and covering should be light. Too soft beds predispose people to sensuous luxury and tempt them to remain in them long after awakening. This is just the hour most dangerous of all." Stanley Hall suggests moderate work and music as cures of the habit of self-abuse. "Work reduces the temptation", says Hall, "and so does early rising." But excess of work is to be avoided for "excessive mental or physical effort easily fatigues before the power of resistance by rapid growth is acquired." Good music is a moral tonic. Any talk that stimulates the sex impulse is to be avoided.

So far we have pointed out only the negative methods of saving the child from falling into evil ways. What positive suggestions have we to offer? There are two ways of handling this problem,—sex-nurture and sex-enlightenment.

So far as *Sex-enlightenment* is concerned we are in perfect agreement with the view advocated by the great Russian educationist Pinkevitch. "We would like to say," says Pinkevitch, "That this field of work requires most careful treatment and the unintelligent occupation with sex-enlightenment may lead to results which are the exact opposites of the aims of the teacher. From our point of view the best method is the method of indirection. Sex-enlightenment should be provided through the medium of the regular subjects of the curriculum. The attention of the children and the adolescent need not be specifically fixed on them, but while teaching natural science, literature, and problems of social life, teachers may incidentally lead the boys to the understanding of the nature of sex phenomena also."

Sex-nurture is the only effective remedy against all evils. Every individual is endowed by nature with a certain amount of energy. It accumulates from day to

day as we take our nourishment from nature. Now if this energy is not properly utilised it takes a wrong course for its expression. Sex nurture consists in the proper use of this energy.*

According to some writers co-education improves sex morality among boys and girls. Pinkevitch says that when boys and girls learn together and work together, they get habituated to the life of each other, and curiosity about another sex vanishes. It is just where the boys and girls are segregated from each other that they grow curious about the nature of the other sex. But the success of co-education very much depends on the traditions and the peculiar circumstances of a people. In India co-education has to be tried cautiously. One thing has, however, to be emphasised. Modern Psychology does not believe in the ruthless repression of the undesirable tendencies of the young but rather in their sublimation. We have to divinitise the Satan himself, and make him do service to God. "There is a soul of goodness in things evil, would men observingly distil it out." We can bring the best out of children by encouraging them in all

*"It is, therefore, of supreme importance that this fund of energy be utilised in those forms of activity which from the point of education are most valuable and necessary. It should be directed towards physical culture, athletic sports, manual labour, intellectual activity, the Pioneer Movement, and all sorts of work which requires a considerable amount of physical power. If the strength of the child is expanded normally in these directions, no strength for the hypertrophic development of sex impulse will remain"—Pinkevitch *Education in Soviet Russia* p. 334. In the Russian system of education, in addition to the usual extra-curricular activities of the adolescent, there is in the curriculum itself enough room to utilise the physical energy of the child. They have simplified their curriculum by dividing it in three heads—nature, labour and society, and they try to develop in the individual both theoretical and practical abilities. Labour is the central theme of a Soviet Labour School. We know both Rousseau and Pestalozzi insisted on teaching some trade to the child, or giving him education through trade so that he may be able to support himself in school and stand on his own legs in after life. Apart from this pragmatic value, manual work in school is necessary for the very purpose of keeping the boys physically active and so keeping their minds engaged and raising their standard of morality.

pursuits and by providing ample opportunities for the free expression of their conative and emotional nature.

SOCIAL INSTINCTS — Social instincts develop most during this period. The child is very sensitive to public blame or praise. He is prepared to do anything which will bring the praise of his fellows on him. This tendency if not properly cultured leads to over-self-consciousness, vanity, affection, and showing off, which characterise the life of a man in later years also. Once abnormally developed, if proper scope is not found for its assertion, the individual becomes melancholic and has a tendency to end his life. Such was the case of Robert Clive. For the fun of merely doing something conspicuous he had scaled the tower of London, from where he was taken down with great difficulty by others. He was the leader of the gang that troubled the shopkeepers of the village by doing one mischief or on other. He was happy so long as he found room for his showing off, but whenever his inner urge was dammed, he preferred to end his life. It is said, he thrice attempted to commit suicide and he actually ended his life by suicide.

SUGGESTIBILITY — Another important characteristic of adolescence is the suggestibility of the boy. His personality is not well-organised, there is no centrality of purpose in his character. Hence the elders should send out only pious and holy thoughts to him. These ought to be thoughts of encouragement, of doing noble deeds and winning honours in the world. The teacher has a special responsibility in this respect. He re-lives in the life of his pupils, and if he wants to immortalise himself, let his heart pulsate with the heart of his pupils, and let him feel his oneness with them. Even unconsciously no word ought to drop out of the teacher's lip which injures the feeling of the boy. His speech should be soothing and sweet. When the teacher feels for his

pupils, as intensely as they feel for themselves, there will be a natural restraint over the evil propensities.

THE IMPULSE TO WANDER —The Adolescent wants to make adventures. He is always after something new. Going on travel is of very great value at this period. The educative value of travelling has long since been recognised. Locke advocates it in his *Thoughts*. But travel is of value from another point of view also. The child becomes weary at this age of the discipline of the home and the school. He aspires to gain some degree of freedom, and have the joy of seeing new things. "At the dawn of adolescence", says Stanley Hall, "this impulse to migrate or wander shows a great and sudden increase. The restlessness of spring is greatly augmented. Home seems narrow, monotonous, intolerable, and the street and the motley passerby interest and invite to be up and away." The child gets impatient of restraint, there is the dread of tedium and he has a desire "to shelve all old impressions and indulge a yearning for and into space." "If this instinct," says the same writer, "is not normally developed and then reduced again by the right corrective, it has many forms of persistence into adult life in the gad-about, globe trotters, vagabonds, rovers, gypsies, or those interesting psychic species, who move or change their vocations, go from country to city, from house-keeping to boarding, a unique type of travellers, with no purpose but to go." It is therefore the duty of parents and teachers to see that this wandering instinct instead of being mercilessly crushed is well utilised and kept within proper limits.

EMOTIONS OF THE ADOLESCENT —Adolescence is a period of great excitability of emotions. As the instincts of the child attain maturity, his feelings also undergo a great change. Now pleasure and pain which remain the only motives of action in infancy, and social blame or praise—the motives of latter childhood, are supplemented

by other motives, which are generally considered more refined and pure. The child is actuated by love of his fellows. Love is the dominant feeling of the adolescent child. This is due to the ripening of the sex instinct. "Sex is the most potent and magic open sesame," says Hall, "to the deepest mysteries of life, death, religion and love"* It is this which makes love so powerful a force in the life of the adolescent.

Adolescent love is of the most selfless kind. The child is prepared to do service to another child for no other ulterior end but to gain his love. The child is prepared for any sacrifice demanded of him for the sake of his friend. Most boys at this period have their *chums*. The chum inspires the child to action, his presence gives him interest in study and play. The chum, at times, is so intensely loved that his separation, even for a short time, is borne with pain. The chums usually belong to families that have the same social status. But at times a rich boy may develop an intense liking for a boy coming from a poorer family. In such cases we have many examples of noblest acts—acts, done from motives of pure love and self-sacrifice. One comes across instances when a rich boy would insist on taking the same food which his friend of the poor family takes. He insists that his parents should give everything to his friend which he himself gets from them. He would have nothing, of which he cannot partake with his friend †

*Stanley Hall *Adolescence*, Vol II, p 109.

†A friend of the writer, now a Sanyasin, related his own experience about the self-sacrifice of his friend. The former came of a poor family, but his friend of the adolescent age came of a rich family. This rich man's son developed such an affection for his *chum* that he would not even take his food, read or play without him. He would have no article of luxury which is not given equally to his friend. The two had to be kept together in the same house and the rich man supported them both. They received their education together till a very late age.

Such adolescent experience develops in one the spirit of self sacrifice and social service. We can expect selfless love only from him who

In the early period of adolescence love is usually directed to a person of the same sex. Later it becomes directed to a person of the opposite sex. The change comes naturally as the sex instinct ripens, for the unconscious roots of love are in the sex. Sometimes, however, the former stage may persist longer than what is natural. This results in mal-adjustment to social relationships. According to psycho-analysis, one of the reasons of the tragedy of Hamlet is his strong love of a male friend. His love of Horatio is abnormal, it is much more than is proper for a youth of his age. His abnormal love for a person of the same sex is greatly responsible for developing in him an aversion to women. When a person loves a thing, he is blind to its faults, but when there is an inward aversion, he sees only the defects. His utterance, "frailty, thy name is woman," simply reveals his own mentality; there is no place for women in his heart and the utterance is simply a rationalisation of the inner wish to avoid their company.

It is the prime duty of the educator to see that this feeling of love does not take same mischievous turn. When this happens the boy develops fetishes, and an unreasonably strong attachment to particular objects. Adolescent love is to be utilized in the service of society. It should not be allowed to waste itself away in mere vetipurations of the heart.

The love impulse of the adolescent is easily directed towards great men. Then we have the phenomenon of hero-worship. "Boys in their teens," says Hall, "have a veritable passion for the stories of great men." Through this spirit of hero worship we can bring immense changes

has loved, or had the good fortune to live in an atmosphere of love during his childhood. What a man becomes in latter life is very much determined by what he has been in his adolescence. He who lived under tyranny will be tyrant, where as one who lived in an atmosphere of love will be a lover or a selfless worker.

in the life of the child. Moral conduct is mostly a result of hero-worship. The kind of behaviour we love and think about naturally reproduces itself in our own acts. *Man cannot be goaded to virtue, they can be persuaded to love virtue.* If the teacher has accomplished the latter task he has done all that he ought to do and need do. The rest will take care of itself. Let the teacher, therefore, place proper examples of virtuous conduct and of virtuous life. If the child loves virtuous men, he will be virtuous himself.

The adolescent are most open to religious influences. If a man ever became religious, he became in his adolescence. This is due to the fact that love in all its forms is intense in this period. Religious consciousness psychologically is nothing but sublimated love. Psychologically, religion and love rise and degenerate together. In one's adolescence one is supremely religious, in latter life, religion is disclaimed. For God, as averred by all philosophers, saints and prophets, is known only through love. "Because He is love," says Hall, "love only can know its own."* Our present age is godless, it is also an age of great strife, in which love is conspicuous by its absence. The teacher should not let go the period of adolescence to plant in the holy heart of the child the love of the Sublime.

The adolescent have an immense love of poetry. Love, religion and poetry—the three have one origin. It is admitted on all hands that the soul of poetry is love, and the sublimest poetry is an expression of one's devotion to the Supreme Being. Poetry is the expression of the highest of

*"We must love God with all the heart, soul and mind and strength because he can only be known by love, and not by argument from design or sufficient reason or cause, and if we do so aright we shall not make him a love fetish or idol, a transcendent or extraneous personality, nor shall we approach him with phallic ecstasy or *parusia mania* or many of the arts of pious ecstasies, but we shall realise that He is the most immanent of all things, and that the higher monotheism is not altogether separable from higher pantheism"—*Adolescence*, Vol. II, p. 127

our feelings in the best possible manner. The adolescent love of music is proverbial. Music and poetry often go together. We have to see that this love is kept alive and we have to make use of it to sublimate the life of the child. Through music and poetry, many good sentiments can be developed in the child's mind. Songs about the motherland will develop patriotism. Songs expressing love of God will develop religion.

The adolescent child intensely loves nature. He has predisposition to animism. To him the sun, the moon, the mountains and the trees all talk. They have communion with their fellows even as we have. It was with reference to his adolescent experience that Wordsworth wrote the lines

To every natural form, rock, fruit, or flower,
Even the loose stones that cover the highway,
I gave a moral life. I saw them feel,
Or linked them to some feeling · the great mass
Lay bedded in a quickening soul, and all
That I beheld respired with inward meaning

This love of nature also makes the adolescent poetic. It makes him behold life in all so-called inanimate objects. In poets this tendency persists till much later. Poets are adolescent all their life. We should not starve this love of nature in the child by refusing his hungering soul the necessary food. The child is to be allowed to indulge in nature and give expression to his feelings in words.

IMAGINATION.—Adolescence is a period of building castles in the air. "Puberty," says Stanley Hall, "is the birth days of imagination. This has its morning twilight in reverie, and if brilliant and vivid, supplements every limitation, makes the feeble athletic, the beggar rich,

knows no limitation of time or place and is, in a word, the totalising faculty. In its world all wishes are actualised, and hundreds of our returns show that in many cases of children, their surroundings not only shrivel but become dim and shadowy compared with the realm of fancy." Every one in this age is a poet and flies on the viewless wings of poesy, for there is no 'dull brain to perplex and retard'.

This tendency has its own good and evil aspect, and the teacher has a great responsibility in studying the fancies of the child and giving them the proper mould. Without fancies a man's life is dull and insipid, the first adventures in the realms of the unknown are made in our fancies and day-dreams and these later become actualities. As sister Nivedita said, there can be no castle on earth without there being castles in the air, the evil lies in not seeing any one of them realised on earth. Too much flight of fancy also leads a man to see no good in life, he becomes impractical, for there is the obvious contrast between the reality and the realm of imagination.

INTELLECTUAL GROWTH — Adolescence is a period of rapid intellectual growth. The child gains the power of abstract thinking. The curriculum for this period should be so devised as to contain lot of practical and intellectual pursuits. Original thinking has to be promoted and habits of hard work have to be created. The child's reason is awake, hence subjects like Mathematics, General Science, Grammar, History, Causal Geography and Civics should be taught in this period. His appetite for intellectual food is quite keen, and suitable food has to be provided to the child. But we must be on guard against overstuffing his brains, for overfeeding is as injurious to the system as underfeeding. 'Just as many a youth,' says James, "has to go permanently without an adequate stock of conceptions of a certain order because experience

of that order were not yielded at the time when curiosity was most acute, so will it conversely happen that many another youth is spoiled for a subject of study (although he would have enjoyed it well if led to it at a later age) through having had thrust upon him so prematurely that disgust was created, and the bloom quite taken off from future trials "**

SCOUTING IN ADOLESCENCE

We have emphasised above the importance of practical pursuits to the adolescent. Of all the extra curricular activities of a modern school scouting is the most beneficial to the adolescent. The routine work of the school has a tendency to dull the initiative of the child, to benumb his impulsiveness and to render him a mere cork in a big machine. It is the one great evil of all regimental systems that they ignore the personality of the individual and aim at mass production. It ought to be, on the other hand, the one aim of education to develop the individual in the way he can grow and not try to suppress his creativeness for dead uniformity's sake. The good of the individual scholar lies in finding opportunities for the expression of his original nature—his instincts and desires—rather than in their ruthless suppression. A man with a cramped soul has few chances of shining in the world. Society can except little of him. He may possess a vast amount of learning but the force of personality will ever be lacking. Now scouting aims just to build this harmonious and well developed personality which will count as a force in the world at large.

Scouting is a form of activity in which fullest scope is given for the development of those traits of an individual's nature which for lack of proper care would have died away even at the sprouting age. There is a number of unde-

*James *Talks to Teachers* p 149

sirable tendencies in each child which the educationists very often try to repress and very often they fail in doing so. Now scouting aims just to utilise the energy behind all these so-called undesirable impulses. Scouting, that is to say, aims at sublimating the instinctive nature of the child rather than repressing it. This may be illustrated by taking as examples a few of the instinctive tendencies of a child which from the point of view of the class-room are quite undesirable.

The child has a tendency to wander about. Now if the tendency is not properly developed and regulated the child either turns melancholic or has a tendency to be a vagabond. Scouting aims to sublimate this tendency in an admirable manner. The scout-masters take the boy-scout into the country whenever they get holidays from the school to explore and ramble about. Under the guidance of their masters they learn to make accurate observations of plants, trees and natural formations and to make maps and report correctly whatever they see and hear.

Love of display is another strong impulse of the adolescent child. Now, if it is not bridled properly, it tends to make the child a boaster, an exhibitionist or even a tyrant to his weaker fellows. By scouting this impulse is sublimated into a number of artistic and delightful activities. It is really very exhilarating to the child to put on the scout uniform with scarf and the badges and to parade like soldiers with his fellows at the beat of drums. In the scout rallies he gets a number of chances to show his ability. Here however he does not seek personal appreciation but is rather anxious to enhance the honour of his group and to bring it to the forefront. He has raised himself to a higher plane where the individual merges his interests into those of his fellows and seeks his fulfilment through society.

Similarly there are other impulses which scouting sublimates—such as the prying tendency, the hoarding instinct and the instinct of emulation. Hiking and tracking make use of the prying tendency—as a matter of fact, a scout is nothing if he lacks the qualities of a spy. The hoarding instinct is utilised in making collections of all sorts of curious objects that a scout finds in the way and in making accumulation of small sums of money. The instinct of emulation likewise finds expression in the scout's desire to see his patrol or troupe stand first in all the scouting activities.

Scouting is a form of play in which the elders and the younger take part and spend their time in joy. The camp fires, the scouts yell, the Kum's game and other activities of scouts' life are full of fun and play. Those who think scouting to be a serious form of activity have according to Baden Powell, missed its true aim. It provides, on the one hand, a relaxation from the tedium of the school work, and on the other, opens a safety valve for the discharge of that surplus energy which is kept locked up during school hours. The play activities of a scout, however, are such that they prepare him for shouldering serious responsibilities of after-life. In his play activities the child often anticipates what he is to be in after-life, hence if we can regulate properly the plays of children we can prepare them to become better and nobler citizens of the world.

Scouting not only sublimates the baser instincts, and provides a safety valve to the surplus energy of the child, but it also develops those finer feelings which are essential to manliness and which would have withered for lack of proper culture. Such are the feelings of reverence for elders, courtesy towards great and small, compassion for men and animals; and devotion towards that Being Who created us and maintains our existence here. These we

find comprehended in the ten scout laws which every scout must know and obey

Scouting makes the child's life active and adventurous and teaches him the lesson of self-help and of co-operation with others. When a troop of scouts goes on an excursion the boys themselves have to carry their luggage, they have sometimes to march several miles a day, have to build huts, cook their food, to make purchases, to gather fuel, fetch water and clean utensils. They are assigned duties at night and have to patrol by turns. Thus they undergo "the hardening process" of Locke, their lethargy is shaken off and they are made tougher beings.

In these days there is some form of scouting activity going on everywhere in the world. No vigorous or living nation can do without it. There is the Youngmen's Movement in Germany and in Russia there is the Pioneer Movements. There have similar aims in view as the Scout Movement of Great Britain and India. They train the growing generation to become healthy and helpful members of the state, to sacrifice their comforts and their personal interests for the sake of their country or society in general. India needs a large number of such associations working everywhere throughout the country so that she may become one among the free and self-respecting nations of the world.

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CHAPTER XXI

EVOLUTION OF LANGUAGE

IMPORTANCE OF THE STUDY —For parents and teachers the study of the evolution of language is of paramount importance. One cannot have a thorough knowledge of the mental life of the child unless one also knows the process of evolution of language—the chief instrument of his self-expression. We communicate our thoughts and feelings to others through language. The fulfilment of all our desires depends upon such communication. The young child, because he cannot communicate properly his thoughts and feelings to other persons, cannot get many of his wishes fulfilled. He has to forego many pleasures of life because he has no mastery of language.

Language is not only a means of communication of our thoughts and feelings to others, it is also a means of self-expression. The mind grows through self-expression. Thoughts become clear as they are expressed to others. As the child expresses himself to others he learns about his own powers and gains confidence in himself. The social self of the child develops as he acquires more and more language, for then he makes an effort to come in contact with society and gain the love and admiration of his fellows. The social self of the child, who is retarded in language, is very much cramped. He has to be shy and reserve. Children, who have no practice in speaking or who stammer, are in general mental development much behind those who are fluent in speech.

Language is the chief, perhaps, the only instrument of thought. Many thinkers hold that thought and language are obverse and reverse of one and the same coin. Thought,

according to some psychologists, is suppressed speech. It is evident that there is much correlation between the thinking power of an individual and his command of language. The intellectual powers of a man can often be accurately judged by his linguistic attainments or the size of his vocabulary. As the thoughts of an individual or a nation grow, the vocabulary also has a corresponding growth. A peasant uses only a few hundred words, whereas Milton used 8,000 words, Shakespear 15,000, Huxley 20,000 to 30,000. Hence the number of words that a child uses or can understand is a proper index to his mental growth.

STAGES OF SPEECH DEVELOPMENT

We may divide the evolution of speech in three stages :

- 1 The sound production and the babbling stage.
- 2 Single-word-sentence stage
- 3 Production of significant speech stage, when different parts of speech are used with discrimination

Each of the above stages has its peculiar characteristics. They correspond with certain stages in the evolution of the thinking power of the child.

THE BABBLING STAGE —The production of sounds and babbling are a part of reflex activity which is spontaneously done by the child. It is a great progress from the birth cry to produce varied sounds. It seems meaningless to adults—a mere waste of energy on the part of the child. But it has a great significance in the development of speech. Babbling is an early effort of the child to speak. The child thereby gains co-ordination between different organs that are involved in speech production. The mere babbling, in course of time gains

meaning as expression of pleasure and pain. This happens like the conditioning of reflexes as the child comes in contact with the environment.

THE SINGLE WORD STAGE —The babbling of the child gradually yields place to utterance of significant words. The child's power of self-expression and of getting his wishes fulfilled is immensely increased as soon as he learns the meaning and the potency of certain sounds. A single word uttered by the child at this stage may stand for a number of sentences. The word "Mamma" may mean—"Mamma, give me milk, "Mumma, I am hurt," "Mamma, take me up." The child learns many words through the imitation of elders or of other children. Thus his vocabulary grows. In this process girls make more rapid progress than boys, as they are more imitative by nature. The first born babe usually takes longer period in picking up speech than those who are born later, since the latter have the advantage of imitating the elder child. The best language teacher of a child is a child of a similar age. The single word stage usually lasts from 10 months to 2 years. The words are usually nouns.

PRODUCTION OF SIGNIFICANT SPEECH —The last stage is one in which the child significantly uses different parts of speech. The sentences of a child at this stage first consist of nouns and verbs. Later on adjectives are added, then his thought extends to words designating temporal and spatial relations.

The above stages in the progress of language learning have their correlatives in the evolution of thought. The babbling stage roughly corresponds with the stage of perceptual thinking, the single-word stage marks the advent of imagination, and the use of significant speech signifies the evolution of the conceptual power. The single word stage is psychologically very

important, for now the child has a means of calling back to the mind what is absent. Since animals have no words, they cannot recall what is past, nor can they think of the future. A word learnt is thus a tool gained to command the past experience, and to make it available for future use.

But real thinking is not possible unless one apprehends the relations of objects and expresses those relations to others, in other words, till one gains the capacity of abstraction and synthesis there is no real thought. All significant speech implies the possession of this capacity, whatever be the degree in which it exists.

PSYCHIC FACTORS IN SPEECH DEVELOPMENT

There are two factors involved in the evolution of the speech in the child—imitation and spontaneity. The work of imitation is obvious. The child is always consciously and unconsciously imitating those who come near him. Deaf children remain dumb due to lack of stimulus for speech production. The child unconsciously gathers impressions from the environment which, in course of time, burst forth in speech. Girls imitate more and react to a stimulus more quickly, hence they learn language faster than boys.

The work of spontaneity in language learning is not as obvious as that of imitation. Spontaneity is seen in the selection of words. Out of a large number of words heard by the child, he picks up only a few and tries to master them, excluding others. These words are selected in accordance with the age, the mental development and the particular liking of the child. The work of spontaneity is also to be seen in the selection of the person whom the child imitates. He imitates one whom he

likes "Imitation grows in intensely," says Wilham Stern, "in proportion with the likeness of the copy to the copier." Thus the child imitates, his brothers and sisters more than adults. We can also see the work of spontaneity in the use of words by small children while speaking with different individuals. A child who knows two languages speaks one kind of language with his mother and another kind with the servant. The child, at times, shows spontaneity in inventing words.

EDUCATION IN LANGUAGE

We have outlined generally the process of development of speech in early childhood. This process goes on without any effort on the part of the parents or the teacher. But the child would not attain the high stage of intellectual attainment if he were left to acquire language as he might. We can trace the roots of many defects of thinking to faulty training in language. The individual who does not attach importance to the right use of words for communicating any idea to others cannot be expected to be clear in his thoughts.

THE IMPORTANCE OF THE VERNACULAR.—The best language training is possible only through the vernacular. The training in language of children in this country is defective in many respects—the most important of which is the excessive time given to the learning of a foreign language rather than the vernacular. Most educational thinkers agree on the point that progress in thought in childhood can be made only through the vernacular, and its neglect, therefore, is the most lamentable part of the education in this country. "The heart of education," says Stanley Hall, "as well as its phyletic root is the vernacular literature and language. These are the chief instruments of the social as well as of the ethnic and patriotic

instincts”* The cramming of English by Indian children at the pre-adolescent stage is to the detriment of the vernacular. The child is just trying to get mastery over one of the tools of thought and expression, to make him learn the use of another is to spoil his mastery over both. “The polyglot people that one meets on great international highways of travel,” says Hall, “are linguists only in the sense that the mock on the variety stage who plays a dozen instruments equally badly is a musician. *It is a psychological impossibility to pass through the apprenticeship stage of learning foreign languages at an age when the vernacular is setting without crippling it*” The early introduction of a second language thus prevents the child in gaining mastery over the language that alone can really be the reliable instrument of original thinking. When one race lives at the mercy of another, mental retardation of the former is natural.

SPEAKING —The best and the most direct means of training the child in language is to make him speak correctly. Let the child be trained to hear carefully what is said and let him reproduce accurately the sounds that are heard. The child has a natural tendency to imitate in his own speech the sounds that he hears. Now in the process of imitation he may commit mistakes due to any of the following causes:

- (a) Defective hearing
- (b) Defective noting of the sounds
- (c) Defective pronunciation
- (d) Defective remembering

Defective hearing may be either congenital due to an inborn defect in the auditory organ or it may be due to inattention. The inborn defect of the ear of course,

*Adolescence Vol II p 454

cannot be removed. But an early detection of this fault is very helpful in properly educating the child. There are about 4% of the school boys who have some defect in hearing. Since the defect is not detected early enough the child misses much that he could have gained otherwise.

Defective hearing due to inattention can be cured through proper training in concentration of attention. Everyone attends to what is interesting, what is very striking and what is often repeated. The word should be told loudly to the child again and again till he reproduces it correctly. This is to be done in the case of the mother tongue as is done in the case of a foreign language. In a continued speech often defective hearing is due to lack of power of understanding or rapid comprehension. To such children one should speak slowly and distinctly. The lower the class that a teacher teaches in a school, the slower should be the speed of his speaking. There should be pauses between group of words.

Defect in noting the pronunciation is again due either to lack of power of concentrated attention or due to lack of comprehension. This can also be removed by training. Training in sensory discrimination, provided by Madam Montessori, can go a great way in improving children's power of noting pronunciation of words. Children, who are mentally deficient, have little power of concentrated attention. Such children acquire speech much later than ordinary children, they are also slow in the progress of learning language. The learning of language marks a stage in the development of thought. We have pointed out in the chapter on "Thinking and Reasoning" that discrimination is the most fundamental activity of the thinking process. Distinguishing sounds requires just the exercise of this power. The child who has a greater power of discrimination will learn the language quicker than

the one who has it in a small measure We can, however, make the power efficient by proper exercise

Defective pronunciation is either due to lack of power of proper motor co-ordination or it may be due to the early formation of wrong habits The latter kind of defect can be easily removed through proper training. As to the former kind a great improvement can be made in the speech of children by proper exercise. Some children cannot produce certain sounds due to defective organs of speech Stammering is often congenital When stammering is due to mental deficiency, the defect cannot be remedied, but in any other case of stammering a great improvement can be made by suitable exercises.

Defect in speech due to faulty memory is natural. Children's immediate memory is not as good as that of the adults They should be made to pronounce a word or a sentence immediately they are told Children differ in their memory Mentally defective children have not as much power of remembering as brighter children have. Hence the latter pick up speech quickly Thus the intelligence of a child can be very much determined by his power of learning a language or by the number of words he knows.

CONVERSATION.—The most effective method of teaching language to the child is through conversation The younger the child the greater is the need to teach him everything through conversation. In the present day school the importance of teaching through the ear is not sufficiently realised As soon as the child enters the school, he begins to be taught through the eye rather than through the ear Reading and writing occupy the major part of the school hours It is, however, an unpsychological procedure to begin education with reading and writing. 'It is hard and, in the history of the race a late change,'

says Stanley Hall, "to receive language through the eye which reads instead of through the ear which hears. Not only is perception measurably about three times slower, but book language is related to oral speech somewhat as an herbarium is to a garden or a museum of stuffed specimens to a managerie. The invention of letters is a novelty in the history of the race that spoke for countless ages before it wrote. The winged word of mouth, saturated with colour, perhaps hot with feeling, musical with infection, is the utterance of a living present personality, the consummation of man's gregarious instinct."*

What is emphasised above is not that the child should not learn to read and write or that the latter are not of value in themselves, but only that the printed page must not be too suddenly or too early thrust upon the child. The plea is for more oral work, stories and narratives. A great amount of what the child is taught these days through books can be taught much more efficiently through conversation or oral work.

READING —Reading makes a full man. Higher mental development is not possible without acquiring the power to read the printed page. The thoughts of the wisest are accessible to us through books. These thoughts provoke thinking in us, thus reading becomes a very important means of mental development.

Reading may be loud or silent. Many defects of speech can be remedied through loud reading. While a child is reading aloud before the teacher, care should be taken that he keeps the book at a proper distance from the eye, makes proper pauses and puts proper emphasis on words. All these help comprehension of the matter read by the student. If the book is kept too near the eyes, the eye-voice-span of the child would be limited ;

* *Adolescence*, Vol II, p 461

he would be able to see only a few words at a time and this will interfere in quick comprehension of the passage. If the eyes of a child are myopic, glasses should be soon supplied. Shortsightedness brings about retardation in mental growth by the interference it makes in quick comprehension of the material read.

The child who reads without proper pauses cannot read to sense. Reading is not barking at the print. We should train children always to read to sense. Wrong pauses are made due to either lack of training in reading or defective training. The teacher's model reading is helpful in removing this defect.

Reading with proper emphasis is necessary to make reading enjoyable as well as significant. Some children read questions, statements and imperatives alike. Children should be taught to read as they speak.

Loud reading, in course of time, has to yield place to silent reading. Loud reading is primarily a means of developing proper oral expression, silent reading, on the other hand, is a means of developing comprehension of the students. Speech defects can be corrected through loud reading, real thinking can be promoted through silent reading. There are certain defects in silent reading common among beginners. These are vocalisation, lip movement, faulty eye movement and regressions. All these interfere in the rapid comprehension of the passage. Reading becomes slow. We can remove vocalisation and lip movement by making children read in the class under the guidance of the teacher. Faulty movement of the eye and regressions can be got rid of by making children read under time-control. By making an effort to read quickly the child begins to read quickly. Daily practice in quick silent reading is necessary. The teacher should give a passage to the class and tell the student that

one who finishes the reading of the passage first, so as to answer certain questions, will gain the highest marks. The answers to such questions should require very few words but should require the knowledge of the passage. The question may be answered in writing. But the writing required should be such as not to hinder speedy answer.

Many students cannot read quickly. This retards their mental development. It is experimentally determined that the quick reader is not the loser but immensely a gainer. He can grasp much more of a piece set before the class than what the slow reader can. Slow reading should not be mistaken for thoughtful reading. Often reading is slow simply because either the child has not the power of rapid assimilation or because he is not trained to read under time-control.

WRITING —Just as reading makes a full man, writing makes an exact man. The advice given by Bacon is true even to-day. Besides writing being a means of self-expression and a means of communication of one's feelings to others, it is also a means by which accuracy is brought in our thoughts. In oral speech a man is not required to be as precise as he has to be when he expresses himself through writing. In the former case he can afford to be vague; he can explain himself, he can modify his statements. This is not so in the case of writing. Hence the development of the capacity of writing is of immense importance to the evolution of systematic thought. Those who lack the latter cannot write out their thoughts on paper.

It should not, however, be introduced too early. As an early introduction of reading prevents the child from becoming acquainted with much of the language, so too an early introduction of writing confines him to pen and paper. Writing slows down a child's progress in thought. "Writing, the deliberation of which fits age better than

youth," says Stanley Hall, "slows down its impetuosity manifold, and is in everyway further removed from vocal utterance than is the eye from the ear"* Some teachers give written work to boys to keep them orderly But such work is injurious in as much as the flight of thought of the students that is possible in oral work is prematurely checked.

These days new systems of education, that require too much of written work from the boys are coming in vogue. The assignments of the Dalton Plan require written exercises. It is true that this brings accuracy in the thoughts of students, but it is at the cost of imaginative thinking One of the greatest defects of the Dalton Plan is that it requires too much work of the eye, the training that a child can receive through the ear is not given sufficient importance This is unpsychological. "We violate the great law that the child repeats the history of the race, and that, from the larger historic stand-point, writing as a mode of utterance is only the latest fashion"*

In this country many new fads are coming Let us not be carried away by the novelty of a thing The words of Hall should caution us against excessive written works demanded of school children Everything has its place. The child has to be trained to writing but writing should not occupy a disproportionately large amount of the time spent in school As the child grows mature in thoughts,

*Stanley Hall *Adolescence*, Vol II p 462- The same writer says further, "Of course the pupils must write, and write well, just as they must read, and read much but that English suffers from this insisting upon this double long event too early and cultivates it in excess, devitalises school language and makes it a little unreal, like other affections of the adult ways, so that when escaping from its thralldom the child and youth slump back to the language of the street as never before. This is false application of the principle learning to do by doing The youths do not learn to write by writing, but by reading and hearing. To become a good writer one must read, feel, think, experience, until he has something to say that others want to hear"

writing should also grow. Then let him express what he remembers, thinks, feels about things of his experience. Thus doing it in a proper measure the child can gain that power which is stronger than the power of the sword

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CHAPTER XXII

MENTAL TESTING.

Mental Testing is a new chapter in educational psychology. It is hardly half a century old, but it has made such rapid progress that no study of educational psychology can be said to be complete without some acquaintance with the science and technique of mental testing. Mental Testing is rapidly becoming a science by itself. The technique it applies these days is sufficiently difficult and it requires a good mathematical ability to follow the chain of arguments used in the exposition of the subject. Here we can simply outline the growth of this science and refer to some of the mathematical formulae that it makes use of to establish certain valuable truths.

Mental Tests comprehend two types of tests—tests in intelligence and tests in personality traits. It is usually the former type that is generally named by the word mental tests.

THE NEED OF MENTAL TESTS. As education made progress as a science there arose the necessity of taking note of individual difference in the capacities of the students. Much of educational effort becomes a waste if we do not take note of the differences in the abilities of the different children but teach them alike by the same method. The method of teaching that would suit a normal boy would not suit one who is either dull or superior in intelligence. In forcing the dull boy to go with the normal boy we are betraying our ignorance of human nature. We are attempting the impossible, whereas when we make the superior boy go at no faster pace than that of the normal boy we are doing violence to his nature. It is a great injustice to the genius

to be made to wait till the average boy has progressed upto a certain standard. This is harmful both to the genius as well as to the normal boy. The genius suffers due to want of opportunity for putting forth the best in him, and the normal boy suffers due to his being yoked with some one who is absolutely disproportionate to him in intellectual stature. Likewise the presence of dull boys in a class of normal boys is also undesirable. The whole class has to wait till the dull boy comes up to the level of the class. The dull boy himself also remains unhappy all the time as he is ever required to make exertions that his abilities do not allow.

Intelligence tests are framed to find out students early enough so that education may be given to them through suitable methods. If we definitely know that a particular boy is mentally defective, we would not waste our labour in trying to make him do the things which we expect of a normal boy. We would not put him in the ordinary school but send him to a special school where mentally deficient children are taught by special methods.

EARLY MENTAL TESTING—In Europe a number of psychologists were making efforts during the latter half of the last century at finding out a method by which the mental capacities of different individuals could be determined. Many psychologists applied the laboratory methods and experimented on the minds of human beings with the help of scientific instruments. The early experiments in mental testing were all concerned with sensory discrimination and motor abilities of an individual. Wundt was the first to lay the foundation of a psychological laboratory at Leipzig in 1879, and all his experiments were based on the sensory discrimination and motor abilities.

THE DRAWBACKS OF THE EARLY TESTS—As mentioned above, these tests attempted to measure intelligence

by measuring its most remote and indirect manifestations, namely, the simple sensory discrimination or simple movements of the body. By these tests, in the first place, wrong and contradictory inferences were drawn. Secondly, there was no correlation between the teacher's judgment and the test results. A boy thought to be average was declared dull according to the tests. Thirdly, the process involved in conducting these tests was in no way the surest or shortest. Lastly, the complication and costly brass laboratory instruments created an unnatural atmosphere and rather a terrific situation for the young children to be tested. The adjustment of the apparatus was in no way easy.

It was Wissler who raised his voice openly against such sort of laboratory mental testing. In 1901 he declared "The laboratory mental tests show little inter-correlation. The markings of students in college classes correlate with themselves to a considerable degree, but not with the tests made in the laboratory." All this was due to the fact that the earlier psychologists failed in bringing forth any reliable statistical method. To quote Ballard "Experimental pedagogy broke down, not in its pedagogy, but in its mathematics."

Several psychologists worked at the same problem, and wanted to evolve really good tests for judging the intelligence of boys. Among these Binet of France, Winch of England, Meumann of Germany and Thorndike of America deserve special mention. These mental tests, even though they have created a new field for research work, must not be considered quite new and different from the examinations which are mainly meant to determine the ability in the boy. In the words of Freeman's "Mental tests are not absolutely new devices. They are not magical instruments of mental capacities. Their fundamental characteristics are the same as those of ordinary examina-

tion with which we have been familiar so long." The only difference that can be shown between the two kinds of tests is that mental tests measure the innate capacity of an individual, while the educational tests measure the efficiency and the products of training of an individual. Thus we say, "Mental tests are instruments for the measurement of relative mental capacity either special or general"

BINET AND HIS WORK —After a careful observation and experience gained in his work in mental testing during the last decade of the previous century, Alfred Binet (1857-1911) came to the conclusion that the tests involving more complex processes could differentiate the bright children from the dull ones better than those that involved simple mental processes. Fortunately there arose a problem among the school authorities of the city of Paris to know whether the inability of the child to keep pace with his fellows was due to innate mental defect or due to unfavourable conditions. This problem naturally led to another problem of inventing tests by virtue of which they could segregate the abnormal children from the class. Accordingly in 1904 a commission was appointed by the government to study these problems, and Binet took up the matter very seriously in collaboration with Dr. Simon. His first 1905 scale, which was published in the Paris journal, '*the Année Psychologique*,' consisted of thirty tests arranged in order of difficulty from the easiest to the most difficult. According to this scale it was thought that an "Idiot" could answer not more than six tests, and an "Imbecile" not more than fifteen.

METRIC SCALE OF INTELLIGENCE.

The data collected by Binet for 1905 scale were sufficient to suggest a new scale in 1908 in which each test was classified under a particular age. The number of tests for each age varied from three to eight. These tests

required information of non-scholastic nature which every normal child of a particular age could be expected to possess. Further modifications were made in 1911. The questions for some of the seare as follows :

THREE YEARS.

1. Pointing out, nose, eyes and mouth
2. Repeating two numbers
3. Enumerating the objects in a picture
4. Giving one's own surname.
5. Repeating a sentence of six syllables e.g. "It is cold and snowing"

FIVE YEARS

1. Comparison of two weights.
2. Copying a square with pen and pencil
3. Repeating a sentence of ten syllables
4. Putting together two triangles so as to make them form a rectangle.
5. Counting four coins

FOR EIGHT YEARS

1. Finding omissions in pictures.
2. Counting backwards from 20 to 1
3. Giving differences from memory
4. Repeating five digits
5. Giving month and year

NINE YEARS.

1. Comprehension, third degree.
2. Giving definitions superior to use
3. Naming six coins
4. Making change.
5. Naming the months.

Thus a five year old boy who could answer all the questions meant for this age was taken to be a boy of normal intelligence. If he could not answer this test fully, but could answer all the questions for age four, he was supposed to have the mental age of four years. Similarly if he, in addition to all the questions meant for age five, could answer all the questions for the age six, he was considered to have a mental age of six years. Binet did not work out this problem to a final solution. His conception was that a superior child would not only answer all the questions of his age but some of the questions of higher ages also.

Many criticisms of the 1908 scale were forwarded by the psychologists of the day. They criticised the scale on two grounds. Firstly, the individual tests were not properly placed, and secondly the tests for the lower ages were easy and for higher ages difficult. This criticism was taken up by Binet in a good spirit, and he accordingly revised his 1908 scale in 1911. He put five questions for each age and reshuffled the tests according to their complexities. In finding the mental age the test was made slightly flexible viz, the child's mental age was considered to be that age at which he passed all except one test instead of every test.

REVISIONS OF THE BINET-SIMON SCALE

After Binet several psychologists took interest in this branch of education, and effected improvements in the technique of giving tests to the boys, and assessing their mental ages. The most important revisions of the Binet's Scale are—(i) The Vineland Revision of Dr. Goddard (1911) (ii) Yerke's Point Scale (1915), (iii) Terman's Stanford Revision (1916), and (iv) Cyril Burt's London Revision (1921).

THE VINELAND REVISION —Dr H. H. Goddard after translating the Binet-Simon Tests into English modified them and inserted certain changes in his revision. These tests were largely used in America, and very recently have been replaced by the revised Terman's Tests.

THE STANFORD REVISION —This revision is the result of Prof Terman's several years of work. This involved the examination of about 2300 children, including 1700 normal children, 200 defectives and superior children and more than 400 adults. The scores, high or low, obtained by foreign-born children were not taken into account at all. Thus the number of children, whose results were considered, was only one thousand, out of which 905 were between five and fourteen years of age. This scale consists of ninety tests, most of them being original Terman instead of keeping five tests for each year generally kept six.

The Stanford Revision gave a high correlation between the teacher's impressions and the actual tests. These tests therefore seemed to be more reliable. Moreover, this scale gave due credit for the parts of the tests rightly answered by the subject for any particular year. Thus a boy who could answer all the questions for the age eight, three questions for age nine, and two for age ten had a mental age equal to 8 years plus 6 months plus 4 months, that is, 8 years 10 months. A few tests for different ages may be mentioned.

THREE YEARS

1. Pointing to parts of the body
2. Naming familiar objects
3. Enumeration of objects in pictures
4. Repeating six to seven syllables,
5. Giving the family name

6. Giving sex.
- Alt 1. Repeating digits.

FIVE YEARS.

1. Comparison of weights
 2. Naming colours
 3. Aesthetic Comparison
 4. Giving definitions in terms of use.
 5. Divided Card.
 6. Three Commissions.
- Alt Giving age.

EIGHT YEARS.

1. The ball-and-field test
 - 2 Counting backwards from 20 to 1
 - 3 Comprehension, third degree
 4. Giving similarities, two things.
 5. Giving definitions superior to use.
 6. Vocabulary (20 definitions, 3600 words)
- Alt 1. Naming six coins
- Alt 2. Writing from dictation

NINE YEARS

1. Giving the date.
 2. Arranging five weights.
 3. Making change.
 4. Repeating four digits reversed.
 5. Using three words in a sentence.
 6. Finding rhymes
- Alt 1. Naming the months
- Alt 2. Counting the value of stamps.

THE LONDON REVISION —Dr Cyril Burt, the famous English psychologist, started his work on Binet's lines in Oxford and later on continued it in Liverpool with the assistance of Simon, Binet's collaborator. Burt translated Binet-Simon's Tests and modified them so as to suit the children in London schools. The London Revision contains sixty-five tests for ages between three and sixteen, but unlike the Stanford Revision, the number of tests for each age is not the same.

INTELLIGENCE QUOTIENT AND ITS SIGNIFICANCE

In the Binet-Simon Scale we could advantageously express the scores of a child in terms of his mental age, and the comparison of the mental age with the chronological age was the only means of stating his intelligence. A boy of five years having a mental age of six years was considered to be one year ahead of his age, and therefore intelligent. Again, according to this scale different children of different ages could be compared by finding out their mental ages. A child whose mental age and chronological age were equal was considered to be the normal child of that age. This method of comparing the intelligence was, however, defective for it was found out that children of the same chronological age, differing in their mental ages by a particular period in their early age, differed by twice that period in their adult age. Obviously such a system of stating the results of the intelligence of children was faulty, and therefore a new and an accurate method of calculating the difference in the grades of intelligence had to be thought of. It was William Stern, a German psychologist, who suggested a measure to avoid the above difficulty, and brought in the idea of "Mental Quotient." This mental quotient according to him is the ratio of the mental age to the chronological

age Thus a child having mental and chronological ages equal has the mental quotient unity, whereas a child of ten with a mental age of thirteen years has a 'mental quotient' equal to $13 \div 10 = 1.3$. This measure clearly avoids the difficulty that had arisen in stating with accuracy the intelligence of children of various age-groups. Naturally this method of calculation appealed to the psychologists of the day. Terman called this ratio the "Intelligence Quotient". This term is now-a-days universally accepted and used. In order to get rid of the decimal fractions, Terman multiplied it by hundred. Thus in a very convenient form we have .—

$$I\ Q = \frac{M\ A}{C\ A} \times 100.$$

where M A denotes the mental age of the subject

C A., the chronological age and

I Q, the Intelligence Quotient

Terman classifies human intelligence in terms of Intelligence Quotients in the following way .—

Class	I Q.
"Near" genius or genius	Above 140
Very superior intelligence .	120—140
Superior . .	110—120
Normal or average	90—110
Dull .	80— 90
Border-line deficiency .	70— 80
Feeble minded (Moron)	50— 70
Imbecile ..	25— 50
Idiot .. .	0— 25

POINT SCALES

YERKE'S POINT SCALE.—Prof. R. M. Yerkes in collaboration with J. W. Bridges and R. S. Hardwick developed a scale which consists of a set of twenty tests, nineteen of which are selected from the original Binet-Simon Scale. The peculiarity of this scale is that neither the tests are arranged according to age, nor is the intelligence measured by taking the ratio of the mental and chronological ages. In this scale the whole set of tests is given to the subject, and his score is calculated. The ratio of this score to the average score of children of his own age gives what is known as the Co-efficient of Intelligence. Hence the I. Q. of an individual may not necessarily be the same as the Co-efficient of Intelligence.

THE HERRING REVISION.—John P. Herring, in a similar manner derived his scale, consisting of thirty-eight tests most of which have been taken from the original Binet Scale. Herring has followed Stanford Revision and not the Yerke's revision for the measurement of Intelligence. According to this scale the norms of children of different ages are prepared after a careful standardization. A subject to be tested is given the tests and his score is compared to the norms already prepared. All that one has to do is to mark out the particular age on the table whose norms is equal to the score obtained by the subject. This is his mental age. The ratio of this age to the chronological age gives the Intelligence Quotient.

This scale has some advantages over the previous scale. The tests are divided into five groups, the first of which can be used as a brief test, and a subject's I. Q. corresponding to this brief test can be accordingly calculated. Here the advantage is that a subject who has answered correctly difficult tests of a particular type of the first group need not be asked easier tests of

the same type of other groups. Similarly a subject who does not answer the easier tests of a particular type of the first group need not be asked difficult tests of the same type of other groups. This saves much time in the administration of individual tests. Moreover, this scale is very simple to administer. The norms are already calculated and up-to-date directions both for giving the test and scoring it are provided in the book.

GROUP TESTS

Individual tests as such are searching and have a far-reaching effect. They clearly give us a new vision of child's future. But they have certain drawbacks. They take quite a long time, and demand on the part of the tester a knowledge both of the technique of testing and of the principle underlying the tests, such as is possessed by few. We cannot therefore test everybody by the individual tests, so also every one among us cannot easily play the part of a tester. Hence arose the need of group tests.

To quote Ballard "Individual testing was born in France; group testing was born in America. And its mother was necessity—the stern necessity of War." Dr. Yerkes, the President of the American Psychological Association, and the Council Members, while administering the individual age scale and the individual point scale tests to the army recruits in the last Great War felt a need of organising these tests so as to be administered to groups of recruits at a time, instead of single individuals. Accordingly the two sets of tests which are now known as the *Alpha* and the *Beta tests* for the army recruits were framed. Those who were declared feeble minded by these tests were again examined by Binet Individual tests and the final estimate of their intelligence was made after they

were examined by both the age scale and the point scale. It is of course true, that one has to place greater reliance on the individual tests than on the group tests, since there are many uncertain factors that enter in the latter.

In England Ballard and Thomson devised what are known as Chelsea, and Northumberland Tests. Ballard also prepared what are called the Picture Tests. Besides these there are several other tests, viz, Terman's Group Intelligence Tests, Cattell's Group Tests, Detroit's First Grade Intelligence Tests, Otis Self-Administering Tests of Mental Ability.

There are many advantages of group tests. In the first place, group tests are mostly verbal and written and take from forty to ninety minutes. Within this limited time, the examiner can discover the dull, can also classify the average children of the class. Secondly, the questions though long have very short answers, and therefore do not take much time in calculation. Thirdly, each question in a group test is so constructed as to admit of only one clear answer. In other words, a group test is "fool-proof," but an individual test is not.

The Army Alpha and Beta Tests —These tests, after a careful standardization, were given to the new recruits in the army. The Alpha Tests were given to those who could understand and write English, while those who could not understand English were given the Beta Tests. The Beta Tests consist of a variety of diagrams and pictures. These consist of a series of eight tests printed on a paper folder. Each test consists of some diagrams and pictures which can be easily followed without the aid of language. In the Army Alpha Tests 212 questions were given and had to be answered at a break-neck speed in 23 minutes and 15 seconds.

Terman's Group Tests —These tests were meant for school children. They are 185 in number, and the time limit for these tests is twenty seven minutes.

Otis Self-Administering Tests —The tests constitute 75 questions in a series of ten tests. The time limit for each question is not fixed, but for the whole test, it is 30 minutes. In such a test the examiner has not to do much. He has only to inform the subjects (examinees) about the time. Moreover the children to be examined are not bound by any time-limit for each test of the series. They can, therefore, spend more time for the difficult questions and less for easy ones and thus regulate the time according to their own convenience.

PERFORMANCE TESTS

Most of the intelligence test, whether individual or group are pre-eminently linguistic in character. A great majority of them are written tests. Hence in these tests those students who had no training in language, who had not the good fortune to attend regularly some school or to come in contact with cultured society, fare ill. They are unsuitable for illiterate persons. For them special kinds of tests are framed, which do not require knowledge of language. The Army Beta Tests are of this nature. The subject is asked to do certain tasks on paper or with some wooden blocks. It is noted how quickly he does a task and how many mistakes he commits in getting at the required result.

Such tests are usually individual rather than group tests. They are useful for testing children who do not understand the language of the examiner or who have ample ability to deal with things other than words.

The Formboard Test is a good illustration of performance tests. This consists of a board with openings of various shapes cut out of it and blocks which must be filled in the openings. There is a great number of different types of formboards. Another good example of performance tests is the *Construction Tests* devised by Healey. They are known as Healey's A and B tests. Test A consists of rectangular pieces of wood from which an inner rectangle has been cut out and divided into five rectilinear pieces of different sizes. The subject is required to place them in their proper positions. The Test B is more difficult as the number of piece taken out is eleven. They have to be correctly replaced. The tests are not applicable to children below the age of ten. What is to be noted is whether the subject follows the trial and error method or proceeds according to a plan based on foresight. The child who follows merely trial and error method will take much longer time and will commit glaring errors again and again.

Another good illustration is the *Ball and Field Test of Terman*. A circle is drawn about two and a half inches in diameter with a gap. This represents a round field with an open gate. The subject is told to imagine that his ball has been lost somewhere in the field, but its whereabouts and the direction from which it came are unknown. He is then given a pencil and then asked to mark out the path he would actually take in his search for the ball, beginning at the gate so as to be sure of not missing it. This test is quite useful for children of ten years of age.

These tests are given to subjects in whose case the group tests show that they are feeble-minded, and to those who can neither read nor write. Thus the performance tests are used for testing the illiterates, the foreign-born adults and for those, declared feeble-minded

by other tests. These performance tests may either be of purely performance type, e g handling of the wooden blocks and placing them at their proper positions within a given time, or of the drawing and pictorial type, which require the use of pen and paper.

STANDARDIZATION OF THE TESTS

A standardised test is characterised by three marks—*validity*, *reliability* and *objectivity*. A test is said to be valid when it actually tests what it purports to test, the findings of the test ought to be generally corroborated by the opinion of the teacher and the school record. The reliability of a test is determined by ascertaining if there is a high correlation (that is, near about '9) between two administration of the test to the same set of subjects, ample time is allowed to pass between the first and the second administration of the test. The test is regarded as objective when it leaves no room for the predilections of the examiner in marking, that is, when to each question set only one answer is possible.

The method of standardising the tests varies according to the nature of the scale. The two main scales are "the age scale" and "the point scale"

In the age scale, questions to be framed have to be graded in difficulty for each higher year, and should be such that they do not require schooling. In a point scale the first few tests should be such that they attract the attention of the subject so that he feels interested in the test. A difficult question given to a young child at the very outset will naturally confuse him, and so his score will not be reliable. While administering the test we have to secure the full co-operation of the subject and create an atmosphere of ease and comfort for the child.

The examiner has to be very cautious in administering the test. Even a gesture suggesting that the subject is in the wrong is detrimental to the reliability of the test. The subject should neither get any cause for suspicion, nor should he feel bored while the test is going on. In case the subject does not like to take the test at a particular time, it should be postponed. The results should be recorded in such a way that the subject may not know that he is being marked.

The group tests have to be "fool-proof" i.e. there should be only one correct answer, out of the set of answers provided, to each question. The tests must have a variety of items. The "guessing factor" should be eliminated by subtracting the number of marks for the wrong answers from the number got for the correct answers of a certain test. The standardized group tests are very handy. The directions both for the examiner and the subject are written on the booklet, and the examiner has simply to invigilate, or sometimes to give the information of the time-limit for each question and for the whole test. In the case of Otis-Self-Administering test, the time-limit is 30 minutes, the warning to begin and then the warning after 30 minutes to stop is the only work for the examiner during this period. In order to check the faults which the beginners may commit while writing the answers, a "buffer test" may also be given.

In an intelligence test for a particular age, the scores are counted and are arranged in groups of convenient equal units in ascending or descending order. The number of cases in each particular unit is called "the frequency" and is denoted by " f ". This frequency is plotted against the marks obtained and the figure so obtained is called the *Frequency Polygon*.

Let us take a hypothetical case —A test is given to 100 boys of age 12, their scores varying from zero to

hundred We divide the whole score into ten units, each unit containing ten scores. Let the frequency in each unit be as is given by the following table.—

Scores	Frequency
0—9	2
10—19	10
20—29	15
30—39	26
40—49	41
50—59	46
60—69	32
70—79	19
80—89	8
90—99	1
Total number of students	200

The above frequency may be shown by the following graph which is “a frequency polygon.”

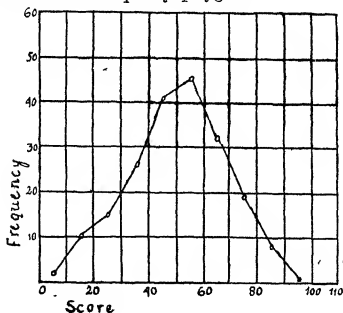


Fig. 8

The polygon when smoothened gives the *frequency curve*. When the number of cases is large, and does not consist of any selected group of children i e be representative of the normal distribution of children in the population, the curve obtained would be the *Normal Frequency Curve*. The shape of the curve would be as shown in Fig. 9

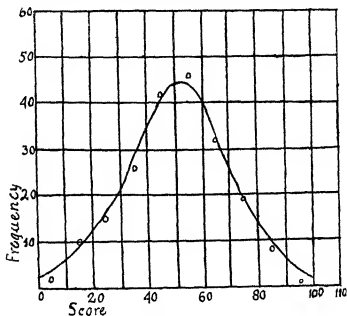


Fig. 9

The other mathematical constants used in the interpretation of results of tests are the *mean*, the *median* and the *mode*. The arithmetic mean is the ordinary average of scores in a series, i e it is equal to the sum of the scores divided by the number of examinees in that series. The median is the middle score in a series of scores arranged in order of magnitude. To illustrate the median and the mean, we consider the following series of scores :

17 7 15 10 9 19 14,

These when arranged in order of magnitude become :

7 9 10 14 15 17 19.

Here the sum of the scores is 91, and the number of the scores is 7, so that the mean is $91 \div 7 = 13$. The median which is the middle score of the series is 14. The mode is the score obtained by the largest number of individuals in a certain group. In other words, it is the score at which the frequency curve is the highest. In a Normal Frequency Curve, the mean, the median and the mode coincide. The frequency polygon referred to above which represents normal distribution of children, when smoothened, gives the Normal Frequency Curve.

We have now to consider the preparation of norms. "A norm" is the score of the middle-most boy of a particular age, scores being arranged in order of magnitude. It is also the median score of the test. For instance, if about 1000 unselected children of a particular age are given the test and the score of the middle boy be 52, then we say that 52 is the norm for a boy of that age in that test.

There are two kinds of norms: "Age-norms" and "grade-norms". Age-norms consist of the median achievement of children (selected at random) of successive ages; grade-norms consist of the mean or the median achievement of children of successive grades. The grade-norms do not serve the same purpose as the age-norms do. Age-norms are used in Intelligence Tests, whereas the grade-norms are used in educational tests. In a particular grade, the children may differ in age. Hence the grade norms cannot determine the mental age of the boys; they can only determine the achievement of each boy.

The following calculations show how age-norms are prepared —

"The mean" is first determined. The scores obtained by giving the test are arranged in order of magnitude,

and then divided into convenient number of units. In the column, against the score corresponding to the unit containing the probable mean, zero is marked. The other numbers $-1, -2, -3, -4,$ and $+1, +2, +3, +4,$. . . are filled in above or below zero according as the scores are arranged in ascending or descending orders of magnitude. This column is marked as the E column. The following table will make it clear:—

Scores	Frequency	E	$f E$
0—9	2	—4	—8
10—19	10	—3	—30
20—29	15	—2	—30
30—39	26	—1	—26
<hr/>			
			$-94 = \Sigma f E \text{ neg.}$
40—49	41	0	
50—59	46	+1	46
60—69	32	+2	64
70—79	19	+3	57
80—89	8	+4	32
90—99	1	+5	5
<hr/>			
	$n = 200$		$204 = \Sigma f E \text{ pos.}$

Here the probable mean is 44.5 , let it be called m . If the correction be C , then we have —

$$\Sigma f E = \Sigma f E \text{ pos.} + \Sigma f E \text{ neg.} = 204 - 94 = 110$$

The correction $C = \frac{I \times \Sigma f E}{n}$, where I = number of scores in each unit and n = number of cases.

$$\text{i.e. } C = \frac{10 \times 110}{200} = \frac{11}{2} = 5.5$$

Hence the true mean is $M = m + C$

$$\text{i.e. } M = 44.5 + 5.5 = 50.$$

Thus the arithmetic mean is 50 .

The median score is the fifty percentile of the series of scores. Accordingly it is the fictitious middle score in the given series of scores. The following statistical table will make the calculations clear —

Scores	frequency <i>f</i>	Accumulated frequency
0—9	2	2
10—19	10	12
20—29	15	27
30—39	26	53
40—49	41	94
50—59	46	140—100
60—69	32	172
70—79	19	191
80—89	8	199
90—99	1	200

$n=200$

The number of cases in this test is 200, and consequently the median will be in the class interval which in the column of the accumulated frequency contains $\frac{200}{2}$, that is, 100. It lies in 50—59. Here 100 divides the interval between 94—140, of the accumulated frequency into two parts, such that 6 cases fall below and 40 cases above the median, while the score corresponding to the 100th case arranged according to merit determines the median. It is equal to the score at the lower edge of the interval containing the median plus the correction $= I \frac{6}{f}$, where I is the number of scores in each unit and f the number of cases in the unit 50—59. Therefore in that interval,

$$\text{Median} = 50 + \frac{6 \times 10}{46} = 50 + 1.3 = 51.3$$

Thus the median score which gives the norm for a particular age is 51.3, while the mean score is 51. The

marks in this particular test for a normal child of the given age having the I Q = 100, can be easily taken to be 51

The intelligence quotient of all the children of this particular age who have been given this test, can be found directly by finding out their *percentile rank*. We have already calculated the fifty percentile which is the median score. Similar method is to be applied in calculating other percentile ranks. The percentile rank having been calculated, the I Q's can be found out at once by assuming the following data.*

120 I Q	corresponds approximately to	95 P R
110 „		84
100 „		50
90 „		16.
80 „		5.

NATURE OF INTELLIGENCE

Though intelligence testing has been now going on for nearly half a century, the exact nature of intelligence has not yet been determined. There is no unanimity of opinion among psychologists with regard to the exact meaning of the word "intelligence". According to William Stern, intelligence is "general adaptability to new problems and conditions of life." It is an ability to apprehend a situation and prepare oneself for proper adjustment. Burt defines intelligence as "inborn, all round mental efficiency". There is difference of opinion whether intelligence consists of one general ability or it is a total of many abilities, whether intelligence is unitary or composite. This ability or group of abilities, of course, is supposed to be innate. Some psychologists call the native power intelligence

* THOMSON. *Instinct Intelligence and Character*, p 185.

and the acquired ability intellect Such is the view of McDougall.*

THEORIES OF INTELLIGENCE —There are four theories of intelligence prevalent among modern psychologists. They are 'monarchic', 'oligarchic' 'anarchic' and 'eclectic.' The popular theory which regards intelligence as a unitary faculty that determines the level of a man's achievement in any intellectual enterprise he may undertake, belongs to the *monarchic* class Here intelligence is regarded as an adaptiveness which enables a creature to adjust itself to changing environment People holding this view believe in inborn all-round mental efficiency as a sign of intelligence According to this view, a person who can perform one intellectual task very well, can also perform another task equally well Dr Johnson, who believed in such a doctrine, said that if Newton could have turned his mind to poetry, he would have been as great a poet as he was a mathematician Just as a man who has vigour can walk to the East just as well as to the West, so too a man with intelligence can do one task as efficiently as he can do another. It is a matter of chance as to what task is undertaken by him

*"Intelligence" says McDougall, "is essentially the capacity for making new adjustments, it cannot be described in terms of structure. Intellect includes intelligence and much besides, for a good intellect implies intelligence that works through and by means of rich and well organized cognitive structure A man may have good intelligence that is, high capacity for making new adaptation, while yet his intellect is poor, because he has not enriched it by acquiring new knowledge or has not logically organized his knowledge as systems of beliefs On the other hand, a man may become very learned, may possess much knowledge and yet remain comparatively unintelligent, because, lacking native intelligence, though having a retentive memory, he remains relatively incapable of making new adaptations, owing first, to his native lack of intelligence, secondly to the lack of systematic organization of his knowledge, which organization is the work of intelligence Thus high native intelligence is capable, as it were, of multiplying itself or its efficiency, for the more it is exercised, the more it perfects the instrument through which it works, namely the cognitive structure of the mind" *An Outline of Psychology*, p 379

This common-sense view, however, is not thought to be very satisfactory by most psychologists. Some have advanced the theory of "group factors", that is, intellectual abilities belong to certain groups. Though there is much correlation between abilities belonging to the same group, there is little correlation between the abilities of one group and another. This theory is known as *oligarchic* theory, it holds that cognitive abilities are manifestation not of a single commanding faculty, but of a few main intellectual powers or groups of abilities. Thus a boy may be quite clever at languages or music, but he may have no head for mathematics. Another boy may have a good mathematical ability but no ability for music or languages. In related subjects he does fairly well but fails in unrelated subjects. This view is advanced by Prof. G. H. Thomson.

Prof Thorndike has advanced the theory known as *anarchic*. According to him the mind is a host of highly particularized and independent faculties. The theory maintains that from a man's ability to do one kind of work we can infer absolutely nothing as to his ability to do another kind of work. If a boy is good in literature we can judge absolutely nothing about his ability to study chemistry, even in scientific subjects, if they are unrelated to each other, from one's ability to do well in one subject, one can say nothing whether in another subjects he would do equally well or not. One has simply to wait and see. This theory is in a way on extreme form of the theory just referred to above as the "oligarchic theory."

The theory which criticises all the above views and is supported by most of the prominent psychologists is the *Two Factor Theory*. This is also known as the "eclectic" theory. The theory is so named as it contains and harmonizes elements from all the main types. Intelligence, according to this view, consists of two factors—the general factor and the specific factor. The general factor is sym-

bolized by 'g' and the specific factor is symbolized by 's'. In any performance of a person, say solving a problem in mathematics or learning some language, both the general abilities of a man and the specific abilities are exercised; in other words, in every act that requires the exercise of intelligence there is 'g' as well as 's' present. Now this 'g' factor is always the same whatever be the task that a man does. The 's' factor will differ in the same man from task to task. He may do music better than mathematics, since he has more special aptitude for the former. Thus the 'g' factor is always the same for the same individual and the 's' factor varies from task to task according to its nature. But there are differences in the general abilities of different individuals as well as in their special abilities. Thus different individuals differ both in their 'g' as well as 's' factors.

A person may score higher in a test than another person either because he has more of 'g' or because he has more of 's'. If a person has superior quality of 'g', we can be sure that his general performance in any test will be good, if he has low 'g' his performance is likely to be poor. But the scores may be different from what we expect due to the particular test requiring high amount of 's' and little of 'g'. The 's' factor varies from person to person and performance to performance. "Thus if we consider two persons A and B who make the same scores in adding figures, we cannot be sure that they will also make the same scores in discriminating pitch. For it may happen that the specific factor assists A's performance in adding figures and hinders it in pitch discrimination while in B's case the specific factor may work the opposite way."*

It is to be noted here that different performances require different amount of 'g' and 's'. In mathematics and

*T. P. Nunn; *Education: Its Date and First Principles*, p 130

the classics, for instance, more of 'g' is required, whereas in music and drawing 's' factor predominates, the latter subjects require a small amount of 'g'. According to Spearman in the talent for classics the ratio of 'g' to 's' is 4 to 1, whereas in the talent for music the ratio is 1 to 4. In the former case, the general factor predominates, in the latter case the specific factor predominates. Thus we cannot predict about the score of any individual in music by knowing his score in classics, nor can we predict the score of classics by knowing the score in music. But by knowing the score in classics we can predict that the individual will do well in life, for most of the problems that an individual has to face in life, require the exercise of general abilities rather than his specific abilities. On the other hand, in the case of music no prediction is possible about the possible success of a man in life. Thus selection of students for civil service based on high score in classics is safer than their selection for such a job based on good musical ability. A good test is always one in which in most of the performances 'g' predominates, for a high quality of 'g' is required everywhere in life.

Spearman has established his theory of two factors by showing that there is always a positive correlation in the performance of an individual in any two tasks. This has been mathematically worked out after giving tests to a very large number of students. The correlation varies from +1 or perfect correlation to +1 or less, but it is never zero. The two factor theory rests ultimately on the fact that there is at least some *positive correlation* between the different abilities, however small it may be. According to Thorndike, there are many abilities between which there is absolutely no correlation, whereas according to Thomson there is positive correlation between the abilities of the same group but there is no correlation between one group and another. Spearman and Thomson are yet contesting on this point. Spearman, however,

admits that there are group factors also in addition to the general factors or 'g'. Thus he claims to synthesize all the views in his own theory. Most of the psychologists, however, favour the theory of Spearman at present.

USES OF INTELLIGENCE TESTS

PREDICTABILITY --Intelligence tests help us in predicting the possibilities of individual children. Thus their mental growth can be properly directed. It has been found by intelligence tests that the curves progress of different individual children do not cross each other, they run parallel to each other. "Assuming similarly of treatment," Says Freeman, "if a child's mental level is below another at one age, it will in all probability remain below at succeeding ages." Children for the most part do not interchange intellectual rank but retain the same rank throughout their lives.

The scores of individuals for mental tests administered at different ages show that there is a remarkable correlation between the scores at different times. The child who scores less at the first time scores less at the second time also when compared with other children. Thus a reliable test score of an individual at any time, is an index of his future progress through training.

Intelligence tests help us predicting the future possibilities of any child. The other means of prediction are teachers' estimates and class examinations. It has been found that teachers' estimates and class examinations are not good guides to children's mental powers. This is due to the fact that the latter base their judgments on actual achievement of children, the former measures their innate capacities. In actual achievement emotion, will and moral character also play a part. The intelligent

child may fail utterly in achievement because of unstable emotional life or feebleness of resolution, whereas a child of low intelligence may show better results through exercise of resolution and will

JUDGING THE TEACHERS' WORK --Intelligence tests may be used to judge the work of any teacher in a subject. When the achievement of any group of students in a subject does not correspond to their scores in intelligence tests, it shows that the subject is not being properly studied by the students. This may be due either to the fact that the subject is not being taught well or due to some other causes. At any rate it is possible to localize the cause of deterioration. The tests scores, besides, may help the head of an educational institution to estimate the accuracy of the teacher's judgment of the abilities of pupils and to gain light upon the basis of the teacher's marks. A teacher who can judge the ability of his pupils well can also handle them well. He would direct his effort to the improvement of each child accordingly.

CLASSIFYING CHILDREN INTO ABILITY GROUPS --Intelligence tests help us in classifying children into ability groups. There are two kinds of classifications urged—the vertical classification and the horizontal classification. According to the former, children of the same mental age are put in the same class without regard to their chronological ages. When the child enters the school, a mental test may be given to him. He should be put in the class he is fit for. He need not necessarily be admitted into any class due to his chronological age. Again, in determining his progress and promotion this fact should be kept in mind.

This would, however, involve fixing different ages of school admission for children of different mental ages, which would be very difficult. Again, children with higher

I.Q's will progress faster than those with lower. Consequently there will be difficulty in their promotion and teaching. Again as children grow in ages, children of widely different chronological ages will be found in the same class. This would involve the difficulty of emotional and other types of adjustments in the case of the educand. It is not proper to put a young child with a grown-up child from the emotional point of view.

Hence a horizontal classification has been proposed. This is based on intelligence quotients of different children rather than on mental age. Pupils may be divided into different groups in each grade, according to their I.Q's. Thus there may be three groups of children—one containing the bright pupils, another the average pupils and a third slow pupils. The first group will finish the curriculum earlier than the second and may reach the college at an earlier date. We shall further consider this question in the next chapter.

SELECTING CHILDREN FOR SPECIAL CLASSES.—Intelligence tests are helpful in selecting children for special classes, such as, classes for backward children and classes for gifted ones. But while selecting children for special classes, especially for those meant for backward children, one has to exercise a great care. The selection must not be based on mere group tests. Each child should be individually studied and individual tests should be given.

EDUCATIONAL GUIDANCE.—Intelligence tests may be used to determine the aptitudes of the students and to give guidance accordingly. From the intelligence tests it is possible to find out what subject a child should study. It has been found that pupils who have followed such guidance have succeeded better in their educational career than those who have not had the benefit of such guidance.

But this guidance should come only as an advice rather than as compulsion. Through the tests it is also possible to point out what courses should a student take up, just as it is possible to point out subjects. It has been demonstrated that the vocational or commercial courses in the high school demand less general intellectual capacity than do the academic courses. Hence children who have low scores in intelligence tests may be directed to practical pursuits.

Mental tests may be helpful in determining the length of the time a child may remain in the school.

ACHIEVEMENT TESTS

NATURE OF THE TESTS —Intelligence tests measure the innate ability, achievement tests measure the result of school education. "Just as the intelligence tests measure the innate intelligence," says Thomson, "an achievement test must measure the result of intelligence plus application." A teacher in addition to his knowledge of the innate ability of his pupil needs to know his skill and the achievement as a result of his teaching. By giving achievement tests to a certain class in different subjects, the teacher can determine the progress of each student in each subject. The teacher on a minute examination of the answer of the student can also know the particular rule or the part of the subject in which the student is weak. He can accordingly guide him in that particular rule or the part of the subject, and thus make him improve his accomplishment in that subject.

The idea of testing achievement like the idea of testing intelligence in the present form was first conceived by Binet, but its later development is due to Buckingham and Monroe. The old fashioned examination cannot ade-

quately measure the achievement of a student. It has many drawbacks. In the first place it cannot examine students in the whole of syllabus within three hour's time, and secondly, as experience shows us, the examiner does not very carefully set the paper by making sure that it is quite suitable for an average student of that class. A student depending upon chance may have a selective study of the subject and therefore either may do very well or very bad at the examination. An achievement test, on the contrary, has to be free from such defects. It is therefore prepared just like an intelligence test. The questions of the test should cover the whole syllabus so that the effect of chance may be removed. Usually the number of questions is large, but the answers required are short. An achievement test should not take more than an hour. To remove the effect of coaching, the tests are prepared with several alternatives. The norms are calculated either according to different ages, or different standards.

EDUCATIONAL AGE.—The *achievement age* in a particular subject, say reading, is obtained in the same way as the mental age in intelligence. As for example, a boy of 8 years achieving a level in reading, which is normally meant for 10 years, has the *achievement age* equal to 10 years. Achievement ages in different subjects may be different. By plotting the achievement ages of the various subjects for a boy of a certain class, we get a *profile* of the boy's attainment. This gives the *educational age* of the subject. The educational age is the total achievement in various subjects divided by the number of subjects.

ACCOMPLISHMENT QUOTIENT —The common measure of intelligence which is universally employed is the Intelligence Quotient (I. Q.), similarly the common measure of accomplishment in a particular subject is known as

the Accomplishment or the Achievement Quotient (A. Q.)* in that subject. It is given by the formula —

$$A. Q. = \frac{\text{Achievement Age}}{\text{Mental Age}} \times 100.$$

Thus increase in A. Q. will show that the pupil has made better achievement than is warranted by his innate capacity, and a decrease in A. Q. will show the reverse effect. From the results it has been found that generally children of I. Q. below 100 have educational age greater than their mental age, while those who have I. Q. above 100 have educational age less than their mental age †

In a similar manner the pupil's Educational Quotient (E. Q.) for a particular subject can be calculated. This is given by the formula —

$$E. Q. = \frac{\text{Achievement Age}}{\text{Chronological Age}} \times 100$$

and

$$A. Q. = \frac{E. Q.}{I. Q.}$$

From the above we can easily determine the accomplishment of a boy, that is, to what extent he is exercising his abilities.

TESTS OF PERSONALITY

Just as there are tests of intelligence framed by psychologists to measure the innate endowments of the individual child, so two tests have been framed to test his personality traits such as will and temperament, his suggestibility etc. But as yet much work has not been done in this direction. There is greater scepticism with regard to the reliability of such tests than what exists in the case of intelligence testing.

Here also Binet was the pioneer. We give below a few of the tests of personality, that would give an idea to the reader of the nature of such tests.

DOWNNEY'S WILL TEMPERAMENT TEST

(A test of self-confidence and resistance to suggestion)

The subject is allowed to read twice over ten words from an oblong white card. Then many tests are carried on, later the subject is asked to mark sixteen statements, (which have reference to the words read, to the examiner's position while reading them, etc.) as true or false, and to underline doubly the response if it is made with conviction and certainty. The scoring here depends upon the number of replies confidently marked as certain. Now the sixteen statements (statements such as "The first word was book", "The shortest word was ice," "In my right hand I had a pencil") are as a matter of fact, all true. But as a test of compliance the pupil is next told that eight were true and eight false, and invited to reconsider his verdicts, the scoring here depending on the extent to which he resists this suggestion.

BINET'S TEST

A card was shown to each of a number of children who were afterwards questioned as to the objects attached to the cards. These included a button, a postage stamp, a small picture of a crowd outside some gates, etc. Before being questioned, the children were divided in three groups. To the one the questions were put in a perfectly straight forward non-suggestive way as "How was the button fastened to the card?" To a second group a more suggestive form was used, viz; "the button was sewn on to the card by thread, was it not?" The third group was asked, "what was the colour of the thread by which the button was fastened to the card?" Now the button was in fact glued on, and there was no thread there. The three sections of the class responded as might be expected, the last group being almost unanimous in accepting the suggestion that thread was used.

INTELLIGENCE TESTING IN INDIA

DIFFICULTIES INVOLVED :—In India intelligence testing is not so easy as we find it in European countries. We have to face many difficulties. There is lack of due encouragement and facilities. The government being pre-occupied with other activities has not so far provided any encouragement in this direction. We have no funds at our disposal to promote intelligence testing. This field being quite new to the Indian people it seems quite unprofitable to them to promote it. Many of our friends simply laugh when they see an enthusiast in this work going from place to place with a bag of test material in his hands. Thus public co-operation which is very necessary for the advancement in any field of research is lacking.

Further, we have very few trained hands for the work. We require quite a large number of them. There is the appalling illiteracy of the masses, which constitutes a big hindrance. It is only the children of the upper level of society that are educated. No education is provided to children coming from the lower strata. Consequently our results of standardization are not as reliable as they ought to be.

One of the main difficulties that has been experienced lies in ascertaining the correct age of the examinee. The age entries in the school records are not reliable. The Indian boy himself seldom knows his exact age. Even the parents do not remember the exact ages of their children. The ages in the school registers are only approximate ages. Since all norms are based on ages, this difficulty vitiates greatly the results of the tests.

Nevertheless there are workers in the field who have dared to face the difficulties and have succeeded in preparing suitable tests and obtaining at least tentative norms. In the following pages we shall refer to their work.

RICE'S HINDUSTANI TESTS —Dr. C. Herbert Rice was one of the first to start this work. His scale is an adaptation into a point scale in Urdu of the Binet Scale and its more recent revision and extension by Terman, Otis and others. Besides the linguistic tests, we find in this scale some performance tests which are a translation of Pinter and Paterson's Performance Tests, with some slight modifications. Now we have also an exact translation of all these tests in Punjabi.

Rice examined 1,070 boys of ages varying between five to sixteen, all attending school from various localities of the Punjab, and standardized his tests on the results obtained therefrom. His scale is constituted of thirty five tests, out of which nine are performance tests. Besides these, he has seven additional tests which are meant for further testing very superior children. An important feature of Rice's tests is that some of the performance tests and the easy verbal tests have been placed first in order to secure the attention of the child. The first ten tests which constitute four performance tests and six verbal tests, form the 'Brief Scale'.

Besides these verbal tests, there are nine performance tests that measure memory and quickness of children.

KAMAT'S AGE SCALE REVISION —Dr. V. V. Kamat of Belgaun Training College has done valuable work in this direction. He has followed the Binet-Simon system with the Stanford Revision, and has adapted it in the age scale for Indian children knowing Kanarese and Marathi languages. In his translation of the Binet Tests and the Stanford Revision, he has replaced all those tests which are unsuitable for Indian children, and has substituted those that suit Indian conditions. Thus asking an Indian child of age three his surname is simply confounding him, but that is not so in Europe.

To devise altogether new tests is not easy, and exact translation of the tests used in the West will not give a correct result. Hence modification is the test way to start the work and this Kamat has done very well.

JHA'S GROUP TESTS —We have given above two of the experiments in individual testing by Kamat and Rice in India. R. B. Pt. Lajja Shankar Jha, the late Principal of Teachers' Training College, Benares, was one of the pioneer to start the experiments in group testing in India. He modified and revised the Simplex test in Hindi and later on in Urdu to suit Indian conditions. In the process of standardization, about 2117 children (including about 200 girls) from about 40 neighbouring schools were examined. The area over which the experiment had been launched was very wide viz. East and West U. P., Rajputana and C. P.

The whole test is put in three sections, each section having six questions. The sections (b) and (c) test similar mental and psychological processes, but are comparatively more difficult than (a). The time allotted for the whole test is one and a half hour.

Jha has also made a revision of Terman's Tests. The test is divided into ten categories each involving a specific mental process, but the number of questions in each unlike the simplex test, differs. Each category is timed separately.

JHINGRAN'S REVISION OF OTIS TEST —V. G. Jhingran of the Teachers' Training College, Benares, has brought forth a revision of the 'Otis Self-Administering Test'. This revision, consists of 75 questions to be administered in only half an hour. The boys have to spend only one period for this work, which can be done without bringing any alteration in the regular

time table of the school Jhingran has not classified the questions, on the contrary they are mixed up, and the subject has to adopt new technique at every moment for each question, and thus switch on his brain to every new type. The speciality in this test is that it is 'Self-Administering'. There is no time limit for each question.

The test has been prepared for children of Benares both in Hindi and Urdu. In both the scripts, the questions are almost the same. The test has been administered to about 4000 children, both males and females.

Achievement tests in almost all the subjects of the school curriculum for classes six to ten have been prepared by the students of the Training College, Benares, who specialise in Experimental Education. The results have shown in many cases fairly high correlation with the school records of the students.

OTHER EXPERIMENTS—Experiments in intelligence testing in other institutions have also been performed. Professor M. V. Golaswami of the Mysore University has prepared tests in Kanarese. They are adaptation of Binet Tests. Professor Golaswami, who is one of the foremost men in Experimental Psychology in this country, is also a pioneer in Intelligence Testing. S. Jalota of the D. A. V. College, Lahore, has prepared Urdu test and is doing the laborious work of preparing the norms. There are a few adaptations of the Binet Tests in Bengali. Mr. H. P. Maiti's Tests are such an adaptation.

Besides the above Dr. West of Dacca, Reverend King of Ghaziabad, Rev. E. W. Menzel of Baloda Bazar (Rajpur Distt. C. P.), Rev. M. J. C. Koenig of Birampur and others have also done valuable work in this field, but so far, their tests have not been popularised.

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- 2 Ballard . *Mental tests*, Chaps. I and II
- 3 Stern . *Psychology of Early Childhood*, Chap XXIX
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CHAPTER XXIII

SUBNORMAL AND GIFTED CHILDREN

Intelligence testing has brought to the forefront the problem of educating properly the subnormal and the gifted or the supernormal children. As a matter of fact intelligence testing originated in a desire to find out the subnormal child, so that he may be properly educated. Up to the present time the problem of educating subnormal children has not received any special attention of the educationists in this country. In other civilised countries of the world, we find special provision made for their education. Medical men have co-operated with psychologists in conducting researches for finding out the best method of educating them. Educational experiments are made and schools are organised in accordance with principles successfully established by such experiments. The results of educational experiments show that all children cannot be treated alike. What is meat for the normal child may be poison for the subnormal.

EDUCATION OF THE SUBNORMAL

The problem of educating subnormal children is divisible into two minor problems, (1) the problem of educating the aments, (2) that of educating the backward. Let us consider each of these problems separately.

EDUCATION OF THE AMENTS — *The aments* fortunately form a very small percentage of the school going population. They are from 75% to 1.5% of the total number of the children of the school-going age. The aments include the idiots, the imbeciles and the feeble-minded.

In the case of such children there is some marked defect in the constitution of the brain. They are absolutely incapable of higher processes of cerebration, and even their perceptions are confused and blurred. In a great number of cases the power of inhibiting the impulses or forming resolutions is very feeble, and they seem quite incapable of sustained effort. Ordinarily aments are a burden to society. Some are incapable of taking care of themselves and some merely swell the number of paupers and criminals in the country. To make something out of them and to prevent them from becoming anti-social the state should take upon itself the responsibility of imparting such knowledge and training to them as will enable them to earn their living and to adjust themselves properly to their social environment.

The aments can be easily distinguished from the normal children by their ungainly appearance, unsteady movements, awkward manner of handling objects and disconnectedness in speech. They are unable to answer correctly simple questions regarding their relatives, homes or give description of places seen. They cannot make simple additions and subtractions. Their power of visualising objects, of comparing one with another is very limited. They can describe things present before their eyes to a certain extent, but the past impressions are not clearly retained. If we try to know their past history we would find that they took longer time in teething, acquiring the power of speech and ability to stand and walk. Some children of this type are found stammering in later life also.

The aments require to be taught in special schools by specially qualified teachers. Seguin in Belgium conducted experiments and has evolved the well known Decroly method of teaching them. According to Seguin, "Education consists in the adaptation of the principles

of physiology through physiological means and instruments to the development of the dynamic, perceptive, reflective and spontaneous functions of the youth"* The teacher has to aim at enabling the aments to control their muscles and at training their senses. What we find in a Montessori school done with normal children we have to do in the case of the aments also who are usually quite grown up when they come to the school. The first lessons will consist of handling objects, keeping them in proper places and arranging them according to a particular order. Of course the objects will be different from those found in a Montessori school. After these preliminary lessons in control of muscles they would be given training of senses. Each sense is to be trained as far as possible in isolation from others. They would be taught to distinguish the shapes and sizes of objects, and differences of colour and sounds. Similarly the idea of weight will be given by actually making them lift objects of different weights. In this way the several senses—the eye, the ear, the nose, the mouth, the skin and the muscles, will be separately trained.

The foundation of all mental development is perception and since the perceptions of the ament are usually blurred and faulty it is necessary to give him sense training to enable him to have correct perceptions. Students of science are familiar with the phenomenon of the rotating disc of seven colours. When the disc is quickly rotated the impression produced in the mind by one colour gets fused with the impression produced by others and thus we have the resultant impression of the white colour. A similar thing occurs in the mind of the ament when he receives impressions from the outside world quickly. His mind is not agile enough to pick them up as they come and to sort them into their proper groups at once, as is done by the normal mind. Before one impression is

*A. F. Tredgold: *Mental Deficiency* P. 471

intelligised, another comes in and the two get mingled so that the net result is only a blurred and vague consciousness of objects. Hence the process of education would consist in giving sense-training to the child in such a way that each sense is trained slowly, accurately and separately from others. At a later stage the teacher will try to impart them knowledge of objects as wholes and ask them to perform simple activities. Thus gradually "the synthetic activity of consciousness" will be awakened and the child will intellectually improve.

It cannot, however, be hoped that the ament would come up to the stature of the normal child. But surely something can be made out of him by giving him proper education. Sometimes a normal child may be mistaken for an ament. During an experiment conducted by Madam Montessori at Rome in the education of the feeble minded children, some of them after being educated by this method for a time grew so much in intelligence as to obtain scores equal to normal children in intelligence tests administered to them. Consequently they were transferred to ordinary schools. But we may say here that these cases of so called aments were not cases of real aments but of children who due to some environmental causes showed themselves inferior to ordinary children. Prominent among such causes are disease, malnutrition, unhealthy habitation and improper care during the early period of life. As to developing the intelligence of real aments psychologists are of opinion that no means exist or will ever exist by which we can supply intelligence to the mentally deficient. Each of these children has a certain capacity for development and in the absence of appropriate training will remain undeveloped.

The aments require much more individual attention than the normal children do. The classes of such children should consist of 12 to 15 children. There should always

be an atmosphere of encouragement and the child should be made conscious of the success attained by him at each stage. His curiosity and interest in objects and things around him should be aroused. The teacher has to work according to the interests of the child. There should be little in the curriculum requiring abstract thinking on the part of the child. Manual occupations should occupy the major portion of his time. A great many of the aments are interested in music and this taste should be developed by proper training. Similarly they should be given training in drawing and painting.

There are two classes of aments viz, the sluggish and the excitable. The former are slow in movement and the teacher has to make them active by creating in them an interest in activities going on all around. They should be encouraged to take part in games, running, music and drill. They ought to be engaged in some form of bodily activities to enable them to shake off their inertia.

The aments of the excitable nature have little power of concentrating attention on anything whatsoever. They should be given work that requires sitting at one place, fixing attention on particular objects and making bodily movements steady. Exercises in paper-cutting, drawing, woodwork and gardening are found very suitable to such children.

The aments are to be introduced gradually to the three R's. In teaching these subjects the teacher should apply the Decroly Method which consists in making everything concrete. The child is to be enabled to learn by actually doing things. He will be asked to note certain features of common objects and animals and describe them in his own language as accurately as possible. Thus his imagination will be developed. While teaching arithmetic he will be given ideas of weights and measures by

actually weighing and measuring objects with his hands. He will be taught additions, subtractions and multiplications with the help of beads and pebbles.

EDUCATION OF THE BACKWARD —Let us now take the problem of educating *the backward children*. They are below the normal in intelligence, yet are not so mentally deficient as to be classed among the aments. Their I Q. as measured by Intelligence Test is found usually between 75 and 90, whereas the aments have an I Q below 75. Most of such children belong to the class known as dull. Socially the problem of their education is far more important than that of dealing with the aments, for, as Dumville points out, "On the one hand they are much more numerous and on the other they will repay far more than the mentally deficient for the care bestowed upon them"* They form about 10 to 12 per cent of the school going children. No effort in our country is made to find such children out, much less to devise methods for educating them. They are usually put in the same class as the ordinary children and are required to complete the same course of study as the latter do. The result is that the backward child being unable to keep pace with the normal one, does not profit much by school instruction. He fails in annual examinations and is consequently detained from going to a higher class. He is taught for another year in the same class in which he had studied for one year. This hardly brings any improvement in him. As he has to study the same subjects and usually the same text books over again, the task becomes dull and monotonous. His curiosity and initiative are thus killed. Further he suffers in self-respect as he has to bear the humiliation of failure and to sit with children younger than himself. They always look down upon him. He carries with himself a defeatist mentality all his life. When he comes out of the educational institution he is found

*Dumville, *Child Mind* p 183.

lacking in the spirit of enterprise and has seldom the courage to take up a new venture.

The normal children also suffer on account of the presence of backward ones among them. The teacher has very often to adjust his methods to suit the needs of the latter, and consequently the lessons become dull and boring to brighter children. Again these backward children are usually much older in age than the normal children of the same class. This brings about several emotional situations which are very difficult to solve. The moral tone of the class deteriorates. In this way both the backward and the normal children suffer intellectually as well as morally. Hence it is the duty of the educators to find out the backward child at an early stage, to ascertain whether the defect is congenital or is acquired, and to devise proper means for his education.

The backward child cannot be so easily found out as the ament can be. There is nothing in his outward appearance, behaviour or speech to distinguish him from normal children. The movements of the limbs of the body are well co-ordinated and in some cases he excels normal children in physical activity—such as, drill, games, running, jumping, gymnastics, and performing acts requiring nice bodily adjustments. As a matter of fact, interest in physical activity is one of the chief merits of such children. We cannot also find them out in ordinary conversation, for they are usually only 12 to 15 per cent below the normal in intelligence, and are pretty well acquainted with the environment in which they live, and know how to deal with different kinds of people. The examination results of the school also do not help us here much, for in a number of cases, specially in lower classes, such children by sheer industry manage to get the minimum pass marks, whereas brighter ones due to negligence fail. But these children are capable merely of rote learning

and doing mechanical work. They do not really appreciate the true worth of the studies and can make little use of them in later life. As they advance from class to class they fail in increasing numbers, since the work in these grades becomes more and more definitely intellectual, and requires little of mechanical memorising. Intelligence tests have proved of special value in finding backwardness in children. Unfortunately few reliable tests are as yet available, though the Indian scholars, as pointed above, are making a great effort to prepare standardised tests for children of the different provinces of this country.

In the absence of Intelligence Tests, however, the school authorities can at present find out a backward child from his general slowness in studies, his inability to grasp abstract ideas, and aversion to such subjects as mathematics and grammar. Such a child is often found reading in a class below the one normally suited to his age. In some cases it is due to late admission to the school, interruption in studies due to disease or accidental circumstances. These should be distinguished from cases of congenital backwardness. Sometimes myopia or slight deafness creates mental backwardness. When the defects of sight and hearing are removed such children regain their natural mental powers.

There should be some special arrangement for the education of the really backward children. In Germany there are separate schools for such children. There the method of teaching differs from the one followed in ordinary schools and the syllabus of studies is completed in a longer period. But the curriculum is the same. Children who make good progress in studies in these schools are later transferred to ordinary schools. This system, though it is good in many respects has serious disadvantages. These schools are nicknamed by the public as "fools schools" or "silly schools," and the boy who is sent to be educated

there feels himself humiliated. He suffers in self-respect and this becomes a potent factor in the retardation of his progress. The courses of studies being the same he has to learn a number of subjects for which he has no aptitude. When he comes out of these schools, having always lived with the subnormal, he fails to adjust himself to the social environment of the normal people.

In America a different system has been adopted. In each district there is some ordinary school with an ungraded class. The size of the class is much smaller than the one for normal children. The children are not fed on the same intellectual pabulum as is found suitable for normal children. The children of these ungraded class mix with normal children during recess and games and other extra-curricular activities, and they enter into competition with them in such activities. The ungraded classes are considered as special coaching classes and some children are promoted to ordinary classes when they are found fit.

We can adopt a modified form of the system prevalent in America for our backward children. We may put all the grown up boys in one section of a class and allow them to take up subjects which require more of practical work rather than of abstract thinking. It should not be necessary for them to learn as much of mathematics and grammar as the normal children do. Their energies may be directed to manual employment, acquisition of arts and crafts, and to the study of such subjects as botany, and agriculture. The backward children, though they cannot keep pace with the normal in studies, do quite well in life. They succeed as farmers, traders, carpenters and artisans. Some of them have special aptitude for particular occupations and it will repay them much better in life if they tried to become masters in these, rather than waste their energies in the acquisitions of literary learning.

EDUCATION OF THE SUPERNORMAL.

Intelligence tests help us in finding out the supernormal as they help in finding out the subnormal. Like the subnormal child the supernormal require special treatment. Whereas we have to slacken the pace in the case of the former class, in the case of the latter, we have to quicken it. Both the subnormal and supernormal suffer by being placed in a school-class of normal children. The subnormal has to be given less work, whereas the supernormal has to be given more work than what is given to the normal child.

There are two classes of supernormal children—those who display remarkable ability in one branch of studies, and those that show intelligence in all branches, though they do not show very outstanding merit in a single branch. The two types of supernormals or gifted children require to be handled differently.

The students who excel in one branch, "the infant prodigies," should be allowed opportunities to develop their special ability under the teacher's guidance. They should not be dragged before the public eye, nor should their one-sided development be pampered. This results in injury both to their body and mind. They should be given general all round education, at the same time be placed under expert teachers who would help them to develop their special talents. Such children may be sent to special schools, but it should be borne in mind that they also receive general education in subjects other than those in which they are interested. Dumville advises that it is not quite desirable to segregate such children from the rest by putting them in separate schools. "It may be possible," says Dumville, "to arrange special talent classes, which the pupils attend for advanced instruction in particular subjects, while for the

remainder of their education they work with the normal children."*

Under the present circumstances, when no such arrangement of special talent classes is possible, let the teacher note special abilities among his pupils and let him give individual attention to the meritorious in addition to his usual work with the whole class. He should encourage them by recognising their merit and by giving them suitable work to exercise their special abilities properly. Thus it is suggested that a talented child may be asked to guide other students of the class in the subject in which he is strong. He would thus become a master of the subject and also gain self-confidence. Besides a spirit of social service would be incalculated in him. Such a child instead of being looked upon with envy by other children will be loved and respected by them. But it should always be borne in mind that the teacher does this for the good of the talented boy and does not merely exploit his talents for his own convenience.

The education of children who have all round good intelligence has to be different from that of those who excel in one subject. Such students, if not attended specially, become the naughty boys of the class. What the normal child takes a long time to do, the superior child does quickly and has much spare time at hand, which he uses in thinking out some mischief so as to gain prominence. It is very necessary that ample work be given to such children to save them from wasting their energy in unprofitable ways.

One device to utilize the energies of such children is to give promotions to them more often than is the case with normal children. But this brings its own compli-

**Child Mind*, P. 196.

cations In the first place, though the child may get double promotion, he has always to be in company with the normal children Hence he does not get the benefit of association with really intelligent children Secondly, the child who gets such promotions has to sit with other children who are much older than himself in age, they are larger in size and have more physical strength The younger child has to face the problem of social adjustment with such children, and in this respect he suffers Though intellectually superior, he has to occupy socially an inferior position This is harmful to the proper development of his character and personality

Hence some educationists have advised that there should be separate classes for such children William Stern calls them "élite-classes" Into these classes only a very few students should be admitted Students who show exceptional all round ability in school work and who have a high degree of Intelligence Quotient as determined by reliable tests may be put in these classes under specially able teachers Wherever this experiment has been tried, it has yielded very remarkable results The brilliant students no longer tend to become shirkers Having known their I Q, proper work can be given to them so as to challenge their abilities The spirit of competition will become keen when they are required to show their relative worth while working with their class-fellows of equal merits In America, there are special opportunity classes attached to training colleges The experiment has proved a great success In this arrangement no difficulties of social adjustment arise

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1. Treadgold · *Mental Deficiency*, Chap VIII and XX
2. Dumville · *Child Mind*, Chap. XI.
3. Hollingworth .

CHAPTER XXIV

PERSONALITY

Personality is the total being of a man. It includes his physical as well as mental make up. Sensations, reflexes, instincts, emotions, perceptions, imagination, memory, intelligence, reasoning, will and character are included in the term personality. It includes besides one's relations to others. A great part of our personality is social in nature. The various factors that constitute personality are joined in a unity. A man's personality is made up of all the experiences that he had from childhood up to manhood. Everyday we are changing, yet all this change does not break our continuity with the past. In so far as there is a unity in all our pursuits and past experiences there is a personality that can be said to exist in us. "We are not the same to day as we were a year ago. Many things have happened in the year. If we should compare ourselves, now with what we were a year ago, in some ways we would hardly recognise ourselves. Yet we are the same personality."* The essence of personality lies in the unity of all our experiences.

ELEMENTS OF PERSONALITY

There are several factors that contribute our personality. It is impossible to name all the factors. The factors have received greater or less importance at the hands of different psychologists. Some have classified personalities according to the prominence of some of these factors, whereas others have classified differently giving prominence to other factors. We shall here take note

* Morgan and Gilliland, *An Introduction to Psychology*, p. 305

of a few elements that constitute personality. The elements generally stated are -

- (i) Personal appearance
- (ii) Intelligence
- (iii) Emotionality
- (iv) Temperament
- (v) Character and moral traits.

The above elements taken together constitute the personality of a man. It is obvious from the nature of the elements that some of them are congenital and others acquired. Intelligence, emotionality and temperament are congenital factors, whereas much of personal appearance and character and moral traits are acquired. The acquired factors are determined by environment and education, the congenital factors, on the other hand, are not so determined. Yet great modifications may be made in the intelligence, emotionality or the temperament of a person through proper education. The congenital factors may be so trained as to do social good or they may take shape so as to do social harm. We have dealt with most of the acquired traits of personality in the previous chapters of this book. We have also dealt with intelligence. We shall be here primarily occupied in the remaining traits of personality, namely the emotionality and the temperament of persons. From the point of view of emotionality, personalities may be divided as "stable minded" or "unstable minded" from the point of view of temperament they may be classified as 'classic' or "romantic" and "extrovert" or introvert.

CLASSIFICATION OF PERSONALITY

Personalities are classified into *stable minded* and *unstable minded* by Trotter (in his book *Instincts of the Herd*). "The stable minded has fixed opinions generally consistent with those of the 'herd' to which he belongs.

He does not readily change them, or conceive them as open to question. The unstable minded is more changeable, being sensitive to experience."

Ostwald conceived of personalities as belonging to either the *romantic* type or to the *classical* type. "The man of romantic type is especially differentiated by the extraordinary rapid character of his thought. He is and his occupations are varied. The classical type, on the other hand is, distinguished by a slower form of thought." His development is relatively slow and he sticks to one pursuit. The romantic type, has greater personal influence, a greater power of inspiring audience or students. He is anxious to gain early popularity. The classical type neither seeks nor gains early popularity. He usually publishes his works late. Rousseau and Voltaire belong to the former type, Newton and Kant to the latter.

The great German thinker Jung has classified personalities into two main types—the *extrovert* and the *introvert*. The two types are as nearly opposed to each other as can be. The gaze of the extrovert is directed outward, that of the introvert inward. The former is objective, the latter subjective. "The extrovert has facility in self-expression, the introvert lacks it. The extrovert tends to have more self-confidence than is justified by the facts, the introvert tends to have less. The extrovert is self-seeking in the sense that he likes other people to think and act as he does—he may be a propagandist, the introvert is detached and remains content to go his way and let others go theirs. The extrovert is stimulated by publicity, and tends therefore to perform least when he is under observation, the introvert, on the other hand, is more often paralysed by the presence of an audience, his best work being done when he is unobserved. The extrovert contemplates opportunity in

height of the scope for self-expression, while the introvert regards it as primarily from the point of view of responsibility. The first thought of the one type generally are the second thought of the other.”* The extrovert is pushing, seeking opportunities, the introvert is cautious and would often let go opportunities even if they come. The one is gregarious the other solitary. In the extrovert the fundamental function is feeling and the possibilities of thought tend to be unconscious, in the introvert the fundamental function is thought and the possibilities of feeling tend to be unconscious. The extrovert is primarily a man of action, whereas the introvert is pre-eminently a thinker. Alexander, Napoleon, belong to the former type, Kant,† Newton‡ and Wordsworth to the latter. Pandit Madan Mohan Malaviya and Pandit Jawahar Lal Nehru are the best representatives of the former class, Rabindra Nath Tagore and Sir Radha Krishnan, of the latter. Psychologists have admitted that it is hard to distinguish the two types of personalities. In everyone of us there are tendencies of each type. A good way of discovering what tendencies predominate in oneself is just to follow the injunction of a psychologist given to an audience hearing on the subject of personality. “A good way for you to distinguish whether your main tendency is towards introversion or extroversion is this. If, as I talk, you wonder which type you yourself are—you are an introvert, if you wonder which your neighbour is—you are an extrovert.”

*Crichton Miller *Psychoanalysis and its Derivatives*, p 152, 153

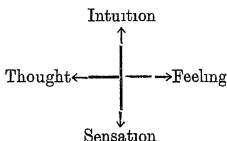
†Kant was so cautious about taking up responsibilities that when during his youth a young lady offered her hand for marriage to him, he went on thinking for over a year but could not make up his mind till the lady's patience was exhausted and she married another person. His first important work was published at the age of sixty six.

‡Newton did not publish his main work ‘*Principia*’ for a long time. When ultimately the work was published he did not rejoice over it. He wrote to his publishers that the publishing of the work would fetch him popularity but the studies which he loved to pursue would decline.

§Morgan and Guililand *An Introduction to Psychology*, p 310

Jung has further divided the above two main types into four sub-divisions according to the predominant psychic function. The functions, according to Jung are thinking, feeling, intuition and sensation. Every individual has all the four functions, but one of them may be predominant. It is the 'superior, function,' the others are then 'inferior' ones.

The thinking type is rational, logical, detached; the feeling type is mainly guided by feelings. The intuition type depends on unconscious inferences; he is quick and alert. The sensational type is mainly influenced by sense impressions. Each function has its opposite. If thought is superior, feeling, standing at the opposite pole (see fig.), is the inferior function, and vice versa.



Similarly intuition and sensation are poles apart. Thus both cannot be dominant in the same man. There is, however, a combination of psychic functions that are intermediary to the polar opposites. Thus if the superior function is sensation, thinking and feeling will be better developed than intuition.

There may be a combination of thinking and sensation, this gives *empirical thinking type*, or a combination of sensation with feeling, giving *emotional feeling type*. Other combinations give the *intuitive feeling type* and the *speculative thinking type*.

When the above four psychic function are combined with the two general attitude-types—the extrovert and the introvert we get quite a complex division of personalities in eight different types—the introvert thinker and the extrovert thinker, the introvert feeling type and the extrovert feeling type, the introvert sensational type and the extrovert sensational type, the introvert intuitive type and the extrovert intuitive type. It is difficult to explain here the natures and aptitudes of all the various types as conceived by Jung.* There are good points and weaknesses in each type.

*‘The introvert thinker’ is essentially subjective, theoretical and may display intellectual power. ‘He is tactless because he lacks intuition; callous because he lacks feeling, inhuman, because he is devoid of sensation. He seeks seclusion and is afraid of criticism. He first evolves a theory in his mind then goes out to find facts to support it.’

‘The extrovert thinker’ is a realist and deals in facts. He is in quest of a formula and when he finds one he makes most of it. He tends to become fanatical and intolerant. This is the commonest type among politicians. As a scientist, he gathers facts than formulates theories.

‘The introvert feeling type’ and the extrovert feeling type are more common among women than among men. The former are intensely moved by feelings, they have strong likes and dislikes. They cannot express their feelings properly hence are often misunderstood, seem to be selfish when they are not. The extrovert feeling type, on the other hand express more feelings than they actually have. They are objective. Such a man is apt to pride himself over his shrewdness in which he lacks. The polar opposite of this type is “the introverted intuition type”. This seems to be on the whole, the most gifted type. The prophets and seers belong to this type, no original work is possible without intuition. Prophets are essentially men of intuition, the priests, on the other hand, entirely lack it. Such a man is courteous, dignified, primarily subjective given to reading between the lines. He appears unstable in friendship. This is temperamental.

‘The introvert sensual’ type appreciates the good things of life. He seems to be self possessed but behind his apparent self possession there is uneasiness. ‘The extrovert sensual type’ is very much dependent on objective conditions. He is most easily bored. He is incapable of taking joy in the abstract. This is the least gifted type.

‘The extrovert intuition type’ is ever after change. He has the reputation of being an optimist. He tends to over-emphasise the importance of certain points. He is essentially an opportunist, and he makes his way into the world by a combination of hopeful agility and childish obstinacy. This obstinacy is his only defence when he is faced with plain facts and direct logic. He is most dependable in times of emergency, for his quick decision helps effective action.

EDUCATIONAL SIGNIFICANCE

The different types of personalities are congenital. By education one cannot change the type but by education each type may attain perfection after its own kind. We have to recognise the congenital temperamental differences among individuals and give education to each taking note of the differences. We have to provide the proper environment for the growth of the special aptitudes of the child which ultimately depend on the type of personality that he is. We should see that the extrovert does not suppress all together capacity for reflective thinking or allow it to die of disuse, similarly the cultivation of feeling should not be ignored in the introvert. Life situations demand different kinds of adaptations, some requiring more thought others more feelings, and the individual who lacks in the capacity for proper adaptations suffers.

What education has to aim at as pointed out by G. H. Thomson, is to create none of the undesirable types. It has to see that somehow the congenital disadvantages are compensated for by proper training. The individual has to be enabled to adjust himself effectively to changing environments of life. When this does not occur unity of personality is often broken and a crisis occurs. Educational efforts should be directed to avoid this and create a happy well balanced personality.

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